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**British West Indies Central Sugar Cane
Breeding Station, Barbados**

TWENTY-FOURTH ANNUAL REPORT

For the Year Ending September 30th, 1957

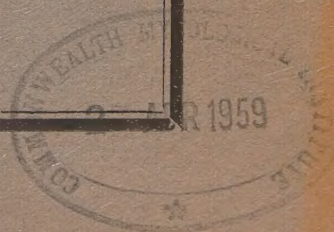


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British West Indies Central Sugar Cane Breeding Station Barbados.

TWENTY-FOURTH ANNUAL REPORT FOR THE YEAR ENDING 30TH SEPTEMBER, 1957

I. RESEARCH WORK

General

The Silver Jubilee of the Station was celebrated on the 1st October, 1957. A paper detailing the history of the Station, and summarizing the results obtained in the twenty-five years since its foundation in 1932, was prepared for presentation at the 1957 Meeting of the B.W.I. Sugar Technologists in Antigua. The varietal revolution which has taken place in the contributing territories, and the greatly improved yields which are now being obtained, are a direct result of the use of new varieties bred at the Station. It is felt to be appropriate to record here an appreciation of the work of Dr. A. E. S. McIntosh, who was responsible for the breeding policy until he left in 1945 and of that of Mr. R. W. R. Miller, Dr. (now Sir) S. J. Saint and Mr. C. C. Skeete, successive Chairmen, and those gentlemen who have served on the Advisory Committee.

During the past year the staff of the Station has been strengthened by the addition of the Junior Geneticist, Mr. D. I. T. Walker, who assumed duties in January, 1957, after a post-graduate course under Professor K. Mather, F.R.S., at the University of Birmingham. Mr. Walker is to be congratulated on the award of his M.Sc. degree since his arrival in Barbados.

Visitors to the Station during the year have included His Excellency the Governor of Barbados, Professor S. W. Brown from the University of San Francisco, Mr. W. I. J. Wallace from the Colonial Office, London and Dr. G. D. H. Bell, Director of the Plant Breeding Institute, Cambridge, as well as others from Trinidad, Jamaica, Grenada, Venezuela, the Dominican Republic, Puerto Rico, St. Croix, Guadeloupe, Germany and South Africa.

The co-operation and assistance received from the Director of Agriculture, Barbados, and the staff of his Department, are gratefully acknowledged.

Sugar Cane Breeding

Details of the sugar cane breeding and seedling testing work are given in later sections of this report. Conditions were satisfactory, arrowing was prolific, and germination of fuzz was generally good.

In the breeding programme many of the crosses were between related parents, since results have shown that this type of cross in interspecific hybrids has given good results due to concentration of desirable genes. New varieties, either locally bred or imported, were used in crosses with proven parents to assess their breeding value.

The use of cut arrows in a preservative solution for breeding has been the standard practice in Hawaii, Queensland and some other countries for many years. The method has evident advantages, not the least of which is the fact that pollination continues unaided, and without the necessity for daily hand-pollination. Previous experience with the method in Barbados in 1937 and 1938 had showed that, for reasons which were not evident at the time, pollen-shedding and seed-setting did not take place normally, and the experiments were abandoned. During a visit to Hawaii in 1956, the Senior Geneticist had the opportunity to see the equipment used there, and to discuss the Hawaiian breeding methods with the staff of the Experiment Station of the Hawaiian Sugar Planters' Association. As a result of the information obtained, it was concluded that possible causes for the former lack of success in Barbados might be:—

- (a) too small a volume of preservative liquid;
- (b) incomplete protection of metal containers from the action of the acid liquid; and
- (c) the use of tap-water, which is distinctly alkaline in Barbados.

The method was tried again in the breeding season of 1956—57, on an experimental scale, using 2-gallon pails of enamelled ware and a range in concentrations of the sulphurous-phosphoric acid solution made up in rainwater. Under these conditions, almost all male arrows completed pollen-shedding normally, and several of the female arrows matured their seed satisfactorily. Some eleven hundred seedlings were obtained from the experiments, the first to be raised from isolated arrows by the solution technique in Barbados. It was evident that some modifications were needed to ensure regular production of fertile seed, but the work showed that the method was promising, and that with further experimentation there was cause for hope that at some future time a large proportion of the crosses might be carried out by the solution technique, with consequent savings in labour and expense.

The seedling nursery was planted in the field in May, under almost ideal conditions and with negligible losses. With a system of portable overhead irrigation lines, and adequate supervision, it is now possible to establish the nursery of some thirty thousand seedlings rapidly from the pot stage even under drought conditions.

The first year seedling trial, which was reaped in February, contained stools of B.37161 as a standard variety at intervals. This innovation proved most helpful, and is a useful development in the selection technique. It also allowed of an assessment of environmental variation in the experimental area, both in regard to weight of cane and to juice quality. Progeny of the new commercial variety B.49119, reaped for the first time in a full-season trial, gave exceptionally encouraging results. Other interesting parents with progeny in the trial were the imported varieties H.32—8560, P.R.1000, P.O.J.3016, F.36—819, Co.270, Co.313, N.Co.310, N.Co.330 and C.P.43—64.

Growing and ripening conditions were favourable—so much so that the island crop in Barbados amounted to more than 200,000 tons sugar for the first time in history. Of the commercial varieties, B.4744 and B.45151 gave exceptional results, both in trials and in commercial cultivation. B.37161 is no longer used as a standard variety in trials, being outyielded by the newer commercial varieties. B.49119 was at its best in the lower rainfall areas. Of the newer varieties still under test, the best for Barbados conditions are likely to be B.50112, B.5213 and B.52298. In interpreting the results, however, it must be borne in mind that recent seasons in Barbados have been favourable ones, and little can be said concerning the performance of the newer varieties under abnormally dry conditions. It is known that B.4744 exhibited signs of stress in such periods of drought as have been experienced, though it has remarkable powers of recovery.

B.49119 shows good tillering and early cane formation, but its canes are rather thin, so that in spite of its high yields there may be prejudice against it in countries where a large-barrelled variety is preferred. It is now being used as standard in the early stages of the trials programme in Barbados.

Cytogenetics Research

A. THE INBREEDING PROGRAMME:

Further selfings were made in lines which are being developed from B.2935, B.3337, B.34104, B.35276, B.37161, B.4098, B.41211 and B.41227. Selfings were made in the new-type lanterns, and germination was generally very satisfactory, so that in most cases large populations of seedlings are available for selection. The selfings were as follows:—

From B.2935	—	F1
„ B.3337	—	E25
„ B.34104	—	H1, H3, R332
„ B.35276	—	B12, B441
„ B.37161	—	U112, U113, U122, U131, U133, U142
„ B.4098	—	C42, C51, C131, C441, P13, T2
„ B.41211	—	D23, D25, D245
„ B.41227	—	A3, A13

In the nomenclature above, the number of digits after the symbol representing the foundation variety indicates the number of successive selfings already carried out. For instance, D245 represents selection number 5 from a selfing of D24. Varieties with two or more symbols — B.34104 and B.4098 — have lines developed from selfings and also from original sib-crosses.

The peculiar reversion to *spontaneum*-like types in second generation selfs from B.4362 was referred to in last year's report. Further selfings in these lines will not be carried out until an assessment of their value as parents has been effected, for which purpose a cross was made with the proven parent Ba.11569. More than three hundred seedlings from this were planted in the Nursery in May. Other top-crosses made for evaluation of inbreds were:—

B.37161	x	R332
B.37161	x	E25
Co.421	x	U134
Co.421	x	T2
Ba.11569	x	P121
B.5041	x	B222
B113	x	B.4098
B151	x	B.4098
B223	x	B.4098
B442	x	B.41211.

In the last four crosses, male-sterile inbreds were used. These would normally be discarded, as useless for further selfing, unless they show immediate promise as parents.

Two inter-line inbred-crosses were made. These were U131 x D25 and C32 x U112. Both gave large seedling populations of attractive type, and showing a high degree of vigour at the nursery stage.

Progeny-testing of the inbreds, even in the early stages of line-development, is regarded as important, for although desirable dominant and recessive loci may be easily fixed by selfing, those responsible for heterosis (apparent over-dominance), on which superior performance in cultivation mainly depends, may be less easily fixed, and may indeed be lost unless the progeny test is employed.

Major morphological characters in many of the lines have become fixed. Those in the D series (from B.41211) for instance, are characterised by yellowish canes with tumescent internodes and rather pale foliage, while those in the E series (from B.3337) all have dark red or purple canes, leaf-sheaths with considerable anthocyanin pigmentation and a peculiar upright leaf-habit.

The incidence of arrowing in inbreds has been studied in detail. Some geneticists who are opposed to the inbreeding approach have conjectured that many selfs would fail to arrow on account of the weakening effect of intense inbreeding. Our results indicate no such relationships between vigour and flowering. While some lines from shy-flowering noble canes have failed to arrow, others have produced sufficient flowers for further selfing. In the interspecific lines some of the least vigorous at the third and fourth generation of selfing are the heaviest arrowers, while some vigorous derivatives from B.34104 and B.41227, both of which arrow heavily themselves, are non-arrowing or flower very lightly. In general the incidence of arrowing has proved a useful criterion for elimination of undesirable segregates, but has not in any way interfered with the progress of line development. The conclusion is that arrowing, like juice quality, is a characteristic of particular gene arrays, and not related to yield. In common also with juice quality, it is affected by seasonal and environmental conditions, and is almost undoubtedly polygenic in inheritance.

Male-fertility, which is essential for pure line development by selfing, is controlled essentially by genetic characters, though anther dehiscence in some varieties varies somewhat according to environmental conditions. It would be expected accordingly, that male-fertility could be fixed by selection in selfed lines for a few generations. Results show that such is indeed the case, and that few male-sterile derivatives are found in the lines after three or four selfings.

Some interesting and important results are emerging from a study of juice quality in selfed lines. Mean brix readings by hand refractometer have been recorded for each individual every March. Two series of lines — from a third nobilisation of the Javan *spontaneum* and from a *spontaneum-robustum* foundation parent — have been discarded on account of low juice quality in all derivatives. In other lines, particularly from B.34104, B.4098 and B.41211, the individuals have shown comparatively high brix readings over the generations which have been tested, and derivatives of great potential breeding value are being accumulated. As noted in previous reports, two lines from B.4362 reverted to a *spontaneum*-like habit, which bred true on further selfing. Juice quality, in these, however, has proved to be exceptionally high for seedlings of such type, and with their great vigour of growth, they have the essentials of useful parent varieties. One was used in a top-cross with Ba.11569 during the year, and others will be tested in the coming breeding season.

The value of the inbreeding approach, so far as the production of improved commercial varieties is concerned, cannot be ascertained finally before the results of some more years' work are available. The results already obtained, and the indications from the selfed material so far developed, give cause for optimism.

Careful consideration has been given to the views of those sugar cane geneticists who do not favour the selfing approach in breeding. Both in discussions during a visit to Hawaii, and in correspondence, a number of differences in the Hawaiian and Barbadian philosophies have been resolved, but there remain others which must await the results of the work which is in hand. Doubts cast on the method by Raghavan in India (*World Crops IX*, 6, 1957) are more easily disposed of. He cites a wide range of variation in selfed progenies, from which it is said to be impossible to recover a pure-breeding line, and states that in many sugar canes there are no survivors in selfed populations owing to the presence of a large accumulation of lethal genes. These observations are not in agreement with the results obtained in Barbados, which have been described above. Moreover, Raghavan seems to contradict his first view, and thereby supports the selfing approach, by postulating that many sugar cane varieties, once thought to be hybrids, have arisen by a post-meiotic parthenogenesis. These he says are useful both as commercial varieties and in breeding. Such a post-meiotic parthenogenesis, if it did take place, would result in offspring in no way genetically different from those obtained by selfing, as the two systems are essentially the same.

B. LABORATORY WORK:

The year's work in cytology was mainly a continuation of that described in previous reports. The standard methods of establishing somatic chromosome numbers, worked out at the Station within recent years, continued to give good results. Trials with different drugs to induce shrinkage and spacing, and of different fixing fluids, yielded no improvements over the a-bromonaphthalene pre-treatment and Bouin fixative.

For root-tip squashes, it was found that satisfactory preparations could sometimes be obtained by the a-bromonaphthalene treatment followed by fixation in acetic-alcohol, pre-mordanting, hydrolysis for 2 minutes in 50:50 conc. hydrochloric acid and absolute alcohol, and squashing in acetocarmine. Further work is in hand to provide refinements of the technique, which has so far been unreliable due to the uncertainty of obtaining sufficient mitoses in the material, and to the difficulty of ensuring adequate hydrolysis without the destruction of cell-contents. Neither this method nor the Price leaf-squash technique has been found as satisfactory in Barbados as the slower method involving embedded and sectioned root-tips.

Pollen mother-cell smears were made for B.37161 in an investigation to ascertain the cause of male-sterility. Meiosis was found to be very regular for a hybrid of this nature, with 50-54 bivalents and 0-8 univalents. In almost all cases there is a single chiasma. Tetrad formation appeared to be normal, and it was concluded that sterility is due to breakdown in the maturing pollen-grains.

In the B.4362 selfs, J1 and J3, which gave *spontaneum*-like derivatives on further selfing, meiosis was found to be regular, judging by the diakinesis and first metaphase figures. The appearance of the offspring is most likely due to non-viability of gametes with any but the particular gene array. This assumption is corroborated by the fact that in spite of a heavy pollen-shed, seedling populations per arrow were small (48 and 32 seedlings respectively) in the selfings.

Somatic chromosome counts were made for numerous commercial and breeding varieties, and for individuals in the inbred lines. A comprehensive examination of the Barbados noble cane varieties, to find whether any had resulted from fertilisation of unreduced female gametes (which function in crosses with *S. spontaneum*) showed that all those examined had the 80 chromosomes characteristic of *S. officinarum*, and were derived therefore from reduced parental gametes in the normal way. The varieties examined were B.391, B.417, B.603, B.2935, B.3013, B.H.10 (12), Ba.11569 and B.6032. Imported noble varieties which were examined and found also to have 80 chromosomes were Otaheite, Badila, Ajax, 28 NG.13 and C.P.36—116.

Seedlings were grown from fuzz introduced from North India, New Guinea and Thailand, kindly supplied by Mr. N.W. Simmonds, when collecting banana varieties. It was hoped that these would be from *S. spontaneum*, but they proved on examination to have 40 chromosomes. They are tentatively referred to *Erianthus arundinaceus*, which they resemble morphologically.

More than fifty chromosome counts have been made for inbreds in the different lines, representing first, second and third generation selfings. As was to be expected, selfs from noble canes, in which meiosis is regular, showed 80 chromosomes. In the lines from interspecific hybrid varieties, on the other hand, it is usual to find numbers different from those of the parent variety, and often some chromosomes are lost on selfing. Such losses are particularly noticeable where segregation has resulted in major morphological changes in variety type, as in the lines from B.35276 and B.4362. Where fixation of characters has occurred early in line formation — as in derivatives from B.3337, B.4098 and B.41211 — chromosome losses are few, and the indications are that stability of chromosome complements is being effected. As in such cases the numbers are well over the 80 of the noble canes, it is evident that several non-noble chromosomes remain. This is important, as such chromosomes carry desirable characters.

Other laboratory work during the year included variety identifications and examination of cane specimens suspected to be affected by disease. Noteworthy in the latter connection were several examples of a type of top-rot accompanied by peculiar golden-yellow leaf colour, presumably due to toxins caused by a fungus or bacterium. The condition, which has been observed for several years, always occurred during periods of wet weather and very active growth, and generally has been restricted to small areas in otherwise healthy fields. The primary cause is not known, but is likely to be physiological and possibly associated with constriction of leaf-spindles, which may fail to emerge from the sheaths. Examples were often seen in which there were one or two distorted and damaged leaves, but in which recovery took place and normal growth was resumed. In all cases the condition was temporary, and although a few canes might be killed, or rotting back took place until arrested by development of lateral buds, the characteristic golden yellow gradually disappeared and normal growth was resumed. In no case has appreciable loss of cane occurred. The disease has many symptoms in common with the Javan "pokkah boeng", but the particular set of conditions which favour an outbreak are not known.

X-Ray Experiments

Seedlings were grown in 1956 from fuzz irradiated at dosages of 50 r, 100 r, 300 r, 600 r, 800 r and 1000 r, as described in last year's report. The seedlings, which were from an inbred line developed from B.41211, were examined at intervals during their growing period, and during the crop season of 1957. There was no indication of any mutational change, and it is concluded that dry fuzz is quite resistant to X-radiation of the dosages employed.

A second experiment was devised during the year under review, to investigate the effect of X-rays on germinating fuzz. For this purpose, samples from an inbred line from B.35276 were soaked and placed in petri-dishes with moist filter-paper for two days, by which time the early stages of germination could be detected under a binocular microscope. X-radiation was then applied at dosages of 50 r, 100 r and 250 r. Germination of the samples was as follows:—

Control	...	...	...	...	...	80 seedlings
50 r	...	...	...	...	...	50 „
100 r	...	...	...	...	...	56 „
250 r	...	...	...	...	...	67 „

The seedlings were planted in the nursery in May.

Experiments on the control of lime-induced chlorosis in sugar cane seedlings

Due to the high lime-content of the soil used for potting and the water used for irrigation, seedlings in Barbados have always been liable, at a certain stage, to chlorosis, which results in a slowing-down of growth and in severe cases to death of seedlings of susceptible parentage. Susceptibility to chlorosis is a genetic character, and varies over a considerable range in different populations. Except in isolated instances, losses due to the condition are not appreciable, and affected plants normally recover and resume active growth after a few weeks.

Experiments in previous years have shown that some control of chlorosis could be effected by spraying with a buffered solution of ferrous sulphate, but the method was tedious and due to the difficulty of ensuring adhesion of the spray solution on the leaves results were irregular and uncertain. During the year, populations showing severe chlorosis were treated with three proprietary chelated iron preparations, applied to the soil in the pots. A fair degree of control was found to be possible by rather heavy applications of these expensive products.

For large-scale seedling propagation, it appeared that chlorosis might be prevented by the use of a suitable potting compost, thereby avoiding the necessity for any control treatment. An experiment was therefore devised, using two populations known from previous experience to be exceptionally susceptible to chlorosis, and four different potting media. The latter were as follows:—

- (1) Soil
- (2) Soil and river sand, 3:1
- (3) Soil and filter-press mud, 3:1
- (4) Soil, sand and filter-press mud, 3:1:1

Sub-treatments were designed to investigate the difference in effect between new mud and old, weathered mud. The unit was a group of four potted seedlings, and the layout a factorial one. In addition to observations on the development of chlorosis, fortnightly measurements were made of the numbers of leaves produced, growth increments, and tillering. In this way the experiment permitted also a comparison of the different media from the point of view of seedling growth and vigour.

The results were interesting in that they showed the undoubted superiority of the treatments containing old, weathered mud, both as regards non-development of chlorosis symptoms and also in promoting healthy, vigorous growth of seedlings. The use of sand in addition to mud resulted in no measurable benefit.

The effect of hot-water treatment of cuttings on arrowing intensity.

In 1953, nurseries were established at Codrington Experiment Station from material of commercial varieties which had been given the long heat-treatment (in hot water at 50°C for two hours) for control of ratoon stunting disease. Cuttings from these nurseries, made with sterilised knives, were distributed to plantations in 1954, so that sources of disease-free planting material could be established throughout the island.

During the arrowing season of 1956 a number of reports were received to the effect that in B.37161 the intensity of arrowing was noticeably greater in fields established from the disease-free nurseries than in those from other sources not grown originally from heat-treated cuttings. Investigation of these claims showed that they appeared to have some substance. In one case a half-field grown from untreated cuttings showed few arrows, while the other half of the same field, grown from treated material, showed rather heavy arrowing. In another instance, a few rows from untreated cuttings in the middle of a field grown from treated material showed clearly that arrowing was a good deal less in these rows.

While for evident reasons such observations could not be regarded as conclusive, they were at least suggestive, and as a result it was decided to lay down a replicated trial to provide precise information. In this, which was planted in November 1956 two varieties, B.37161 and B.41211, were used, in a 4 x 4 Latin Square arrangement with plots from treated and untreated cuttings for each. In addition to the information to be obtained on arrowing intensities, the trial will be reaped in 1958 in order to obtain data on the effect of the heat-treatment on yield.

The effect of treatment with gibberellic acid on the time and extent of arrowing.

Experiments made in several countries, including those of the Agricultural Chemist of the Barbados Department of Agriculture, have shown that gibberellic acid, applied in dilute solution either by spraying or by application in the funnel of the leaf-spindle, results in a remarkable stimulation of growth in sugar cane. From the point of view of the sugar cane breeder, the value of treatment with this substance is dependent upon the extent to which the time and intensity of arrowing are affected in varieties. To obtain information on this, applications were begun in August to canes of a shy-arrowing variety, Ba.11569, and of a heavy-arrowing variety, P.O.J.2878. The acid was used in aqueous solution at 50 parts per million, applied by dropper in the leaf-funnels. Application was also made to canes of Co.290, in which arrows frequently fail to emerge fully from the sheaths, in order to find whether improved arrow-stalk elongation would result in better emergence. The results showed that the remarkable increase in growth-rate found as a result of treatment with gibberellic acid in young canes, did not take place as a result of treatment of canes at a later stage in their growth cycle. There was no significant increase in growth rate in Ba.11569 or P.O.J.2878, nor any appreciable difference in the time or extent of arrowing.

Publications.

- (i) G. C. STEVENSON "*The Sugar Cane in Barbados*".
The Bajan, Vol. 4, No. 7. March, 1957.
- (ii) G. C. STEVENSON "*The British West Indies Central Sugar Cane Breeding Station — Twenty-five Years' Progress*". Paper prepared for the B. W. I. Sugar Technologists' Meeting, Antigua, 1957.
- (iii) G. C. STEVENSON "*Some Thoughts on Variety Selection in Sugar Cane*".
The International Sugar Journal,
Vol. LIX, No. 707, November, 1957.

II. SUGAR CANE BREEDING — SEEDLING SELECTION AND TRIALS.

(i) SUGAR CANE BREEDING — B.59' SERIES

The usual methods were employed in the controlled crossing of various sugar cane varieties from October 1956 to January 1957. One hundred and twenty-six crosses were made for the general breeding programme, as well as thirty-nine selfs and sib-crosses for the cytogenetics programme. The new type of lantern which has been described in previous reports was again used with success, particularly in making selfs and sib-crosses. Experience has shown that with the circular type of lantern, the cane leaves tend to cut the fabric with which the lantern is enclosed. The large skirt which these lanterns carried also caused trouble in periods of high winds. Accordingly the design of the lantern has been altered to a rectangular shape, the covering fabric being tacked on the inside so that it is not cut by the cane leaves. The lanterns have also been made much taller — 56 inches — and shorter skirts are being used. This type of lantern has proved to be quite satisfactory and will replace the circular type.

Further trials were carried out with the Hawaiian technique, and some encouraging results were obtained. Reference is made to these elsewhere in this report.

(ii) SEEDLING RAISING, POTTING AND PLANTING IN THE FIELD NURSERY

Germination was reasonably good, but some crosses proved to be incompatible and produced no seedlings, while others produced very few.

It is estimated that over ninety-two thousand seedlings germinated, of which over thirty-one thousand were potted singly while seven thousand four hundred and twenty-six were potted in bunches of five to ten seedlings each. Twenty thousand and seventy-five singles and six thousand seven hundred and eighty-five bunches were planted in the First Year Seedling Nursery.

Table I gives, under group heads, a list of the crosses made, the number of seedlings germinated, potted and planted in the Field Nursery, while Appendix I gives details for all crosses made.

TABLE I

Number of Crosses and Seedlings in each group germinated, potted and planted in the Field Nursery — B.59' Series

GROUP	No. of Crosses	No. Germinated	No. Potted		No. Planted in Field Nursery	
			Singles	Bunches	Singles	Bunches
<i>S. officinarum</i>						
Noble	1	1,100	850	—	555	—
<i>S. officinarum</i> x <i>S. spontaneum</i>						
3rd Glagah Nobilisation ...	2	95	93	—	79	—
Noble x Local x Glagah ...	3	443	443	—	331	—
Noble x Glagah x Celebes ...	1	5,000	889	288	646	274
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i>						
Noble x Local x Chunnee ...	4	211	203	—	155	—
Noble x Glagah x Chunnee ...	19	20,215	5,510	1,466	3,659	1,138
Noble x Local x Glagah x Chunnee ...	52	44,529	15,564	3,918	10,257	3,772
Noble x Local x Celebes x Chunnee ...	2	178	178	—	49	—
Noble x Local x Glagah x Celebes x Chunnee ...	8	5,994	1,870	411	1,266	410
<i>S. officinarum</i> x <i>S. sinense</i>						
2nd Nobilisation Sinense ...	2	7	—	—	—	—
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. sinense</i>						
Noble x Local x Glagah x Sinense	1	—	—	—	—	—
Noble x Glagah x Celebes x Sinense ...	1	6,000	454	776	229	651
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i> x <i>S. sinense</i>						
Noble x Local x Chunnee x Sinense ...	2	194	194	—	129	—
Noble x Local x Glagah x Chunnee x Sinense ...	12	2,964	1,694	210	997	210
Noble x Glagah x Chunnee x Sinense ...	1	8	—	—	—	—
Noble x Local x Glagah x Celebes x Chunnee x Sinense ...	1	15	15	—	14	—
<i>S. officinarum</i> x <i>S. barberi</i>						
4th Nobilisation Chunnee ...	1	—	—	—	—	—
<i>S. officinarum</i> x <i>S. robustum</i>						
2nd Nobilisation Robustum ...	1	550	300	—	240	—
3rd Nobilisation Robustum ...	1	1,800	504	215	276	203
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. robustum</i>						
Noble x Glagah x Robustum ...	3	1,341	981	59	532	47

TABLE I—(Concluded)

GROUP	No. of Crosses	No. Germ-inated	No. Potted		No. Planted in Field Nursery	
			Singles	Bunches	Singles	Bunches
<i>S. officinarum</i> x <i>S. spontaneum</i> x						
<i>S. barberi</i> x <i>S. robustum</i>						
Noble x Glagah x Chunnee x Robustum	1	252	252	—	160	—
Noble x Local x Glagah x Chunnee x Robustum	3	471	471	—	257	—
Noble x Glagah x Celebes x Chunnee x Robustum	1	167	167	—	110	—
<i>S. officinarum</i> x <i>S. barberi</i> x <i>S. robustum</i>						
Noble x Chunnee x Robustum	2	900	386	83	134	80
<i>S. officinarum</i> x <i>Erianthus maximus</i>						
1st Nobilisation Erianthus	1	—	—	—	—	—
GRAND TOTALS	126	92,434	31,018	7,426	20,075	6,785

(iii) PLANTING THE FIRST YEAR SEEDLING TRIAL

This series of seedlings was bred in 1955, potted and planted in the Field Nursery in May, 1956. In October 1956, selections were made from the Field Nursery. A single cane was taken from each of the selected seedlings, and these canes were cut into setts which were planted in the First Year Seedling Trial. As in previous years, all seedlings which were considered to be too thin for commercial purposes as well as all seedlings which showed signs of flowering were eliminated at this stage, except the seedlings required for breeding purposes only.

The number of crosses and seedlings in each group planted in the First Year Seedling Trial are summarised in Table II. Details for each cross will be found in Appendix II.

TABLE II

Number of Crosses and Seedlings in Each Group Planted in the First Year Seedling Trial — October 1956

GROUP	No. of Crosses	No. of Seedlings Planted in First Year Trial
<i>S. officinarum</i> x <i>S. spontaneum</i>		
3rd Nobilisation Glagah	3	101
Noble x Local x Glagah	5	215
Noble x Dacca x Glagah	1	7
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i>		
Noble x Glagah x Chunnee	15	784
Noble x Local x Chunnee	1	7
Noble x Local x Glagah x Chunnee	49	3,402
Noble x Local x Glagah x Celebes x Chunnee	3	373
Noble x Glagah x Local x Tukuyu x Chunnee	1	4
Noble x Glagah x Celebes x Chunnee	1	75

TABLE II—(Concluded)

GROUP	No. of Crosses	No. of Seedlings Planted in First Year Trial
<i>S. officinarum</i> x <i>S. sinense</i> 2nd Nobilisation Sinense	1	—
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i> x <i>S. sinense</i> Noble x Glagah x Local x Chunnee x Sinense	12	820
Noble x Local x Chunnee x Sinense	1	18
<i>S. officinarum</i> x <i>S. barberi</i> x <i>S. sinense</i> Noble x Chunnee x Sinense	1	34
<i>S. officinarum</i> x <i>S. sinense</i> x <i>S. spontaneum</i> Noble x Celebes x Sinense	1	23
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. robustum</i> Noble x Celebes x Robustum	1	15
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i> x <i>S. robustum</i>		
Noble x Glagah x Chunnee x Robustum	1	102
Noble x Glagah x Local x Chunnee x Robustum	1	137
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. sinense</i> x <i>S. robustum</i> Noble x Glagah x Sinense x Robustum	1	28
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i> x <i>S. sinense</i> x <i>S. robustum</i> Noble x Glagah x Local x Chunnee x Sinense x Robustum ...	1	36
GRAND TOTALS	100	6,181

(iv) RESULTS OF REAPING THE FIRST YEAR SEEDLING
TRIAL— B.57' SERIES

The seedlings of this series were bred in 1954, potted and planted in the Field Nursery in May 1955, and from this into the First Year Seedling Trial in October 1955. The trial was cut in February 1957.

As in previous years, the seedlings were cut, cleaned, bundled and laid out for inspection. For the second time, stools of a standard variety were included — every fifth stool being a standard. This meant that no seedling was more than three holes away from a standard. This has proved to be very useful, and has resulted in a greatly reduced number of selections. Selection was made initially on appearance and later on the usual data obtained from each bundle.

One hundred and seventy-nine selections were made, and these have been planted in ten-stool multiplication plots under irrigation at Codrington.

Table III gives details of the Field and Final Selections from each cross.

TABLE III

First Year Seedlings — B.57' Series Field and Final Selections

CROSS				No. of Seedlings Cut	No. Field Selected	% Field Selection	No. Final Selection	% Final Selection
Ba.11569	x	B.45116	...	4	—	—	—	—
Ba.11569	x	B.5126	...	4	—	—	—	—
Ba.11569	x	Co.270	...	5	1	20	1	20
Ba.11569	x	Co.313	...	12	1	8	—	—
Ba.11569	x	N.Co.310	...	27	1	4	1	4
Ba.11569	x	C.P.44-155	...	8	—	—	—	—
B.3365	x	B.4738	...	58	4	7	4	7
B.3365	x	Co.331	...	37	5	13	3	8
B.3439	x	B.45151	...	163	14	9	10	6
B.35207	x	B.45151	...	55	9	16	4	7
B.35207	x	N.Co.330	...	3	—	—	—	—
B.35207	x	P.O.J.2878	...	165	4	2	3	1
B.37161	x	B.4098	...	26	2	8	1	4
B.37161	x	P.O.J.2878	...	11	—	—	—	—
B.37172	x	B.41211	...	17	2	12	2	12
B.37172	x	B.46364	...	16	—	—	—	—
B.39254	x	B.41227	...	13	2	16	1	8
B.39254	x	B.50377	...	11	2	18	2	18
B.40105	x	B.46136	...	—	—	—	—	—
B.40105	x	P.O.J.2878	...	14	1	7	1	7
B.4145	x	B.41211	...	65	4	6	1	1
B.4145	x	B.43290	...	20	2	10	—	—
B.4362	x	B.39220	...	41	3	7	3	7
B.4362	x	B.4098	...	72	2	3	1	1
B.4362	x	B.41227	...	60	2	2	—	—
B.4362	x	B.43235	...	13	—	—	—	—
B.4362	x	B.50340	...	240	20	8	14	6
B.4362	x	B.51321	...	28	2	6	1	3
B.4362	x	Co.419	...	20	3	15	1	5
B.4362	x	C.P.33-224	...	57	3	5	1	2
B.4373	x	B.49119	...	48	5	10	2	4
B.43283	x	P.O.J.2878	...	30	—	—	—	—
B.43349	x	B.47320	...	130	6	5	2	2
B.43349	x	B.5301	...	73	2	3	1	2
B.48330	x	B.51122	...	13	2	8	2	8
B.4455	x	B.603	...	48	3	6	1	2
B.44182	x	B.45151	...	48	5	10	1	2
B.44111	x	B.41227	...	72	4	6	3	4
B.4596	x	B.4744	...	11	3	27	1	9
B.45152	x	B.4747	...	10	1	10	—	—
B.45152	x	B.48392	...	40	8	20	4	10
B.45152	x	B.5047	...	6	—	—	—	—
B.45152	x	B.50377	...	7	2	29	2	29
B.45152	x	C.P.43-64	...	14	2	14	1	7
B.45154	x	B.49119	...	215	30	14	16	7
B.45170	x	B.4098	...	82	6	7	1	1
B.45170	x	B.49119	...	61	3	5	2	3
B.45170	x	P.O.J.2878	...	33	1	3	1	3
B.46103	x	B.41227	...	42	5	12	3	7
B.46103	x	B.50377	...	7	—	—	—	—
B.46288	x	B.42231	...	37	1	3	—	—
B.47155	x	B.603	...	42	3	7	3	7
B.47179	x	P.O.J.2878	...	25	—	—	—	—
B.47324	x	B.603	...	16	2	13	2	13
B.4970	x	B.4098	...	19	3	16	2	11
B.49170	x	B.603	...	70	2	3	1	1
B.49372	x	B.45151	...	65	4	6	2	3
B.5011	x	B.47419	...	132	11	8	10	8

TABLE III (Concluded)

CROSS				No. of Seedlings Cut	No. Field, Selected	% Field Selection	No. Final Selection	% Final Selection
B. 5012	x	B. 4738	... ..	15	2	13	2	13
B. 5037	x	B. 42231	... ..	53	5	9	3	5
B. 5037	x	B. 4534	... ..	28	2	7	2	7
B. 5041	x	B. 4744	... ..	66	8	12	8	12
B. 5061	x	B. 4098	... ..	70	4	6	3	4
B. 50146	x	B. 4744	... ..	7	1	14	1	14
B. 50184	x	B. 46136	... ..	31	3	10	1	3
B. 50196	x	B. 4098	... ..	15	1	7	1	7
B. 50196	x	B. 47419	... ..	46	—	—	—	—
B. 50210	x	B. 4098	... ..	94	4	4	3	3
B. 50352	x	B. 46136	... ..	4	—	—	—	—
B. 50370	x	B. 4098	... ..	85	5	6	2	2
B. 5142	x	B. 4098	... ..	10	3	30	3	30
B. 5188	x	B. 41227	... ..	2	—	—	—	—
B. 51131	x	B. 4098	... ..	30	5	17	3	10
B. 51190	x	B. 4098	... ..	39	5	13	3	7
B. 51311	x	B. 4738	... ..	5	3	60	2	40
Co-421	x	B. 39156	... ..	61	2	3	1	2
Co. 421	x	B. 41211	... ..	272	14	5	5	2
Co. 421	x	B. 47419	... ..	82	10	12	6	7
Co. 413	x	Ba. 6032	... ..	8	—	—	—	—
F. 36-819	x	Ba. 6032	... ..	25	3	12	3	12
H. 32-8560	x	B. 4098	... ..	64	1	2	1	2
P. R. 1000	x	B. 4098	... ..	291	10	3	4	1
P. R. 1000	x	B. 41227	... ..	88	2	2	2	2
P. O. J. 2878	x	B. 34104	... ..	12	—	—	—	—
P. O. J. 3016	x	B. 4098	... ..	37	2	5	—	—

(v) PROGRESS WITH SEEDLINGS OF THE B.56' SERIES

The one hundred and fourteen seedlings of this series were multiplied at Codrington in ten-stool plots, and in October 1956 a minor selection was made, when the number was reduced to seventy-eight. They were planted in Second Year Seedling Trials in November at the Low Rainfall Station, Codrington, and in a duplicate trial at the High Rainfall Station, Hothersal.

(vi) PROGRESS WITH SEEDLINGS OF THE B.55' SERIES

The seedlings of this series were cut as plant canes in Second Year Seedling Trials during the past crop season at the Low Rainfall Stations, Foursquare and Belle, and in duplicate trials at the High Rainfall Stations, Hothersal and Pool. Sixteen selections were made, six of which will be tested further in Barbados. Selected consignments will be sent to the various contributing Countries in October next.

The performances of the standards and selected seedlings are given in Tables IV and V.

TABLE IV

*Second Year Seedling Trials—Plant Canes**Foursquare—Cut—25th—27th February, 1957**Hothersal—Cut—28th and 29th March, 1957*

SEEDLING	PARENTAGE	No. of Canes (Rotten)		% Arrowing		Z.H.R. Brix		Tons Cane per Acre	
		Four- square	Hoth- ersal	Four- square	Hoth- ersal	Four- square	Hoth- ersal	Four- square	Hoth- ersal
GROUP I									
B.37161 ...	Standard ...	136(4)	148(21)	38	21	20.0	18.7	39.65	51.17
B.4744 ...	Standard ...	—	187(1)	—	6	—	18.8	—	78.08
B.49119 ...	Standard ...	198(3)	—	16	—	20.8	—	49.62	—
B.5503 ...	B.3353 x B.40175	161(1)	160(8)	34	82	21.1	21.3	40.85	51.94
B.5527 ...	B.3439 x B.45237	235(1)	192(6)	10	59	20.9	20.0	52.55	53.49
GROUP II									
B.37161 ...	Standard ...	137(4)	173(10)	45	36	20.2	18.2	36.55	56.41
B.4744 ...	Standard ...	—	173(11)	—	5	—	20.6	—	66.99
B.49119 ...	Standard ...	182(6)	—	34	—	21.3	—	42.31	—
B.5557 ...	B.37161 x B.4098	189(8)	183(21)	55	53	20.2	20.2	47.99	56.33
GROUP III									
B.37161 ...	Standard ...	130(5)	167(9)	41	37	20.6	18.7	36.81	53.84
B.4744 ...	Standard ...	—	192(8)	—	3	—	20.7	—	75.34
B.49119 ...	Standard ...	203(6)	—	17	—	21.9	—	55.56	—
B.5579 ...	B.37172 x B.41211	123(3)	198(17)	26	63	20.0	19.2	34.23	—
GROUP IV									
B.37161 ...	Standard ...	154(4)	148(11)	62	35	20.0	19.5	39.65	52.12
B.4744 ...	Standard ...	—	174(12)	—	1	—	20.5	—	73.44
B.49119 ...	Standard ...	190(4)	—	14	—	21.2	—	54.01	—
B.5599 ...	B.39254 x B.47419	185(12)	219(23)	14	24	20.7	18.7	46.70	61.32
B.55109 ...	B.4145 x B.37193	120(7)	172(5)	—	23	20.6	19.7	32.34	57.62
B.55111 ...	B.4145 x B.37193	135(18)	171(38)	21	23	20.5	19.2	35.09	56.33
GROUP V									
B.37161 ...	Standard ...	130(7)	149(17)	30	34	20.8	18.6	34.31	51.26
B.4744 ...	Standard ...	—	175(15)	—	5	—	20.2	—	76.37
B.49119 ...	Standard ...	197(5)	—	15	—	21.4	—	52.89	—
B.55132 ...	B.42304 x B.37193	161(7)	152(6)	28	35	19.8	18.9	37.24	56.45
B.55137 ...	B.4362 x B.34104	115(6)	142(7)	6	8	21.8	21.9	35.14	58.08

TABLE V

*Second Year Seedling Trials—Plant Canes**Belle—Cut—6th—8th March, 1957**Pool—Cut—25th—27th March, 1957*

SEEDLING	PARENTAGE	No. of Canes (Rotten)		% Arrowing		Z.H.R. Brix		Tons Cans per Acre	
		Belle	Pool	Belle	Pool	Belle	Pool	Belle	Pool
GROUP IX									
B.37161 ...	Standard ...	122(9)	158(5)	17	47	20.0	20.8	51.34	52.89
B.4744 ...	Standard ...	—	164(6)	—	14	—	21.2	—	68.20
B.49119 ...	Standard ...	207(11)	—	8	—	21.0	—	70.52	—
B.55244 ...	Co.421 x B.41211	182(8)	173(4)	67	32	20.0	20.5	56.24	62.77
B.55250 ...	Co.421 x B.41211	186(7)	186(2)	6	44	21.6	21.5	59.94	59.85
B.55258 ...	Co.421 x B.46223	158(6)	156(7)	4	2	18.7	18.2	81.79	78.60
GROUP X									
B.37161 ...	Standard ...	160(3)	183(4)	16	38	20.2	20.3	54.44	55.04
B.4744 ...	Standard ...	—	178(5)	—	3	—	20.8	—	66.91
B.49119 ...	Standard ...	208(6)	—	5	—	20.7	—	68.54	—
B.55304 ...	B.4145 x B.47419	156(10)	185(9)	—	8	21.1	21.3	60.63	70.86
B.55309 ...	B.42304 x B.37193	174(13)	168(8)	—	15	20.4	20.3	63.12	54.61
B.55317 ...	B.4362 x B.4098	140(15)	172(8)	4	18	18.3	20.5	51.00	62.01
GROUP XI									
B.37161 ...	Standard ...	134(6)	123(4)	16	33	18.8	20.7	45.41	47.47
B.4744 ...	Standard ...	—	147(3)	—	8	—	22.9	—	64.67
B.49119 ...	Standard ...	182(2)	—	8	—	19.9	—	57.45	—
B.55362 ...	B.3439 x B.3337	130(7)	133(3)	—	4	21.9	24.5	41.80	47.81

(vii) PROGRESS WITH SEEDLINGS OF THE B.54' SERIES

The seedlings of this series were cut as first ratoons in the Second Year Seedling Trial at the High Rainfall Station, Colleton. The trial at Todds was unfortunately burnt and could not be cut. It is planned to cut this trial as second ratoons during the coming crop season. All of the selected seedlings performed fairly well as ratoons, and none of the other seedlings was sufficiently outstanding as ratoons to warrant their selection.

The performances of the standard varieties together with those of the selected seedlings are given in Table VI.

TABLE VI

*Second Year Seedling Trials—First Ratoons**Colleton—Cut—9th—11th April, 1957*

SEEDLING	PARENTAGE	No. of Canes (Rotten)	% Arrowing	Z.H.R. Brix	Tons Cane per Acre
GROUP VI					
B.37161	Standard ...	144(5)	36	21.3	45.92
B.4744 ...	Standard ...	183(6)	3	21.3	62.52
B.54163	B.4699 x P.O.J.2878	185(6)	10	24.3	46.61
B.54172	B.47386 x B.4098 ...	187(4)	1	21.7	49.71
GROUP VII					
B.37161	Standard ...	164(9)	33	20.4	41.97
B.4744 ...	Standard ...	198(11)	—	21.7	73.36
B.54193	Co.421 x B.41211 ...	234(5)	7	21.7	62.09
B.54196	Co.421 x B.41211 ...	210(7)	20	21.8	60.63
GROUP VIII					
B.37161	Standard ...	161(5)	18	20.8	44.38
B.4744 ...	Standard ...	186(14)	8	21.1	68.71
B.54215	B.37172 x B.41211	151(8)	—	21.2	46.96
B.54227	B.4145 x B.34104	159(7)	5	23.7	57.10
B.54235	B.4145 x B.4098 ...	141(9)	—	21.6	50.91
B.54237	B.4145 x B.4098 ...	174(11)	9	22.1	43.86
GROUP IX					
B.37161	Standard ...	169(9)	27	20.7	48.85
B.4744 ...	Standard ...	174(7)	—	20.5	63.64
B.54243	B.4145 x B.4098 ...	145(8)	—	21.6	56.67
B.54253	B.42304 x B.45151	169(8)	16	21.2	48.25
B.54262	B.4362 x B.4098 ...	200(1)	15	21.1	55.73
GROUP X					
B.37161	Standard ...	127(7)	26	21.5	37.32
B.41211	Standard ...	174(9)	1	22.3	52.80
B.4744 ...	Standard ...	159(5)	—	21.1	51.51
B.54277	B.44341 x B.3337 ...	208(3)	46	22.1	51.94
B.54281	B.45170 x P.O.J.2878	213(4)	1	21.6	51.08

The seedlings of the B.54' Series, which were selected for trial under Barbados conditions were planted in Third Year Seedling Trials during November 1956.

(viii) PROGRESS WITH SEEDLINGS OF THE B.53' AND EARLIER SERIES

THIRD YEAR AND SELECT SEEDLING TRIALS

A. The Seedlings Tested

1. Third Year Seedling Trials

Plant Canes:— B.5321, B.5398, B.53122, B.53200, B.53227, B.53317, B.53320 and B.53362.

First Ratoons:— B.5126, B.5213, B.5235, B.52107, B.52144, B.52158, B.52162, B.52214, B.52222, B.52256, B.52298, B.52306, B.52321, B.52341 and B.52371.

2. *Select Seedling Trials*

Plant Canes:— B.37161, B.41227, B.45151, B.4744 and B.49119.

First Ratoons:— B.37161, B.45151, B.4744 and B.47258.

B. An Ecological Classification Of the Trials

This classification was proposed by Turner after a study of the sugar cane soils of the British West Indies, and is as follows:—

Group I:— Soils with a natural tilth and free natural drainage which require neither to be ploughed or drained.

Group II:— Soils with a tilth which can be improved by ploughing, but which do not require to be drained.

(a) LOW RAINFALL AREAS

Third Year Seedling Trials

Plant Canes Husbands

First Ratoons Hope

Select Seedling Trials

Plant Canes River

(b) INTERMEDIATE RAINFALL AREAS

Third Year Seedling Trials

Plant Canes Alleynedale & Small Ridge

First Ratoons Neils & Searles

Select Seedling Trials

Plant Canes Vineyard & Frere Pilgrim

First Ratoons Halton & Bennetts

(c) HIGH RAINFALL AREAS

Third Year Seedling Trials

Plant Canes	...	...	...	...	Portland & Bowmanston
First Ratoons	...	...	...	...	Applewhaites & Guinea

Select Seedling Trials

Plant Canes	...	...	...	...	Castle & Cottage
First Ratoons	...	...	...	...	Castle

Group III:— Soils which require to be drained but are preferably left unploughed.

Group IV:— Soil with a poor natural tilth, in which a tilth can be created by ploughing, but which require to be drained to maintain their tilth.

(b) INTERMEDIATE RAINFALL AREAS

Third Year Seedling Trials

Plant Canes	...	...	...	...	Valley
First Ratoons	...	...	...	...	Boarded Hall

Select Seedling Trials

Plant Canes	...	...	...	...	Boarded Hall
First Ratoons	...	...	...	...	Buttals

C. RAINFALL DURING THE SEASONS

TABLE IX

MONTH						1934—35 to 1953—54	1954—55	1955—56	1956—57
January	...	...	...	...	...	3.05	4.84	2.49	6.29
February	...	...	...	...	...	2.38	2.50	1.68	3.65
March	...	...	...	...	...	1.70	1.83	0.65	1.82
April	...	...	...	...	...	2.16	4.06	0.62	3.65
May	...	...	...	...	...	3.12	2.28	1.07	2.03
June	...	...	...	...	...	4.84	4.95	7.87	6.59
July	...	...	...	...	...	6.45	4.18	7.13	6.35
August	...	...	...	...	...	7.10	2.84	6.31	10.55
September	...	...	...	...	...	7.63	9.55	10.68	4.56
October	...	...	...	...	...	7.81	12.70	9.78	9.10
November	...	...	...	...	...	8.79	7.80	9.45	6.10
December	...	...	...	...	...	4.70	4.44	4.75	4.90
January	...	...	...	...	...	3.14	2.49	6.29	5.41
February	...	...	...	...	...	2.45	1.68	3.65	2.07
March	...	...	...	...	...	1.82	0.65	1.82	1.47
TOTALS	...	...	...	...	...	67.14	66.79	74.24	74.54

Rainfall during the period was above average, and exceptionally well distributed. Heavy yields of cane were obtained, and the juice quality was exceptionally good, so that a record crop of two hundred and four thousand five hundred and thirty-four (204,534) tons of sugar was produced.

TABLE X

*Soil Type—Group II(a)—Third Year Seedling Trials—Plant Canes
Husbands—Cut—6th and 7th February, 1957*

VARIETY	Tons Cane per Acre	Z. H. R. Brix	% Sucrose in Juice	Purity	No. of Rotten Canes per Plot
B.37161 ...	38.76	19.1	15.0	86.1	11
B.41211 ...	45.97	18.9	14.6	83.9	11
B.4744 —	53.70	19.8	15.5	85.6	10
B.49119 ...	49.48	20.2	17.0	87.2	9
B.5321 ...	42.10	19.3	16.0	85.9	9
B.5398 ...	36.77	19.2	15.8	85.6	10
B.53122 ...	39.38	19.7	16.1	86.3	9
B.53200 ...	44.33	19.7	16.3	85.9	8
B.53227 ...	42.56	19.0	14.6	83.8	9
B.53317 ...	45.66	18.3	15.6	85.7	26
B.53320 ...	42.87	19.6	16.4	86.0	8
B.53362 ...	42.72	18.3	15.4	84.8	18

A difference of ± 3.45 tons cane per acre may be considered significant

In this trial, the standard varieties B.4744 and B.49119 greatly and significantly outyielded all other varieties. In addition, the juice quality of B.49119 was the best of any of the varieties tried. The variety B.53200 gave a reasonably heavy yield of cane of good juice quality, but arrows too heavily to be useful in Barbados.

TABLE XI

*Soil Type—Group II(a)—Third Year Seedling Trials—First Ratoons
Hope—Cut—12th and 13th February, 1957*

VARIETY	TONS CANE PER ACRE		Z.H.R. BRIX		% SUCROSE IN JUICE		PURITY		NO. OF ROT- TEN CANES PER PLOT	
	Plant Canes	1st Rtns.	Plant Canes	1st Rtns.	Plant Canes	1st Rtns.	Plant Canes	1st Rtns.	Plant Canes	1st Rtns.
B.37161 ...	34.52	26.72	19.4	20.1	15.8	17.4	88.4	90.2	15	4
B.41211 ...	44.88	34.81	18.6	19.3	15.2	16.0	84.7	86.9	7	14
B.4744 ...	49.13	31.36	19.4	20.7	17.3	17.0	90.6	88.3	10	4
B.5126 ...	38.33	32.29	20.9	21.3	18.4	18.2	90.2	88.3	5	1
B.5213 ...	43.45	40.86	18.1	19.7	15.5	16.2	86.5	88.9	16	4
B.5235 ...	40.86	34.25	19.1	20.2	16.8	17.3	88.9	88.6	40	20
B.52107 ...	40.84	36.38	18.6	19.9	15.9	16.9	87.5	89.7	8	1
B.52144 ...	44.18	36.47	19.7	20.4	16.0	17.1	86.3	87.1	15	7
B.52158 ...	35.30	32.86	19.5	21.1	16.1	17.1	87.4	88.4	43	9
B.52162 ...	37.41	27.32	18.5	19.4	15.0	16.1	85.4	87.8	11	5
B.52214 ...	50.71	32.72	18.4	20.6	16.5	17.5	87.9	88.6	18	5
B.52222 ...	38.17	31.04	17.6	20.0	14.6	16.5	84.6	88.2	5	4
B.52256 ...	36.30	34.21	17.7	18.9	14.2	15.4	81.3	86.5	10	7
B.52298 ...	45.47	32.58	19.8	20.9	15.5	16.9	84.0	87.2	8	1
B.52306 ...	45.92	34.12	17.9	18.5	14.3	14.6	83.8	85.6	11	3
B.52321 ...	38.10	33.99	20.9	21.5	17.4	17.9	90.3	90.5	9	2
B.52341 ...	37.66	31.15	18.6	19.4	15.4	15.3	87.5	86.2	15	6
B.52371 ...	35.24	28.22	20.5	21.7	18.4	18.4	88.7	88.0	7	1

A difference of ± 3.55 tons cane per acre may be considered significant.

In this trial, B.5213 gave the heaviest yield of ratoon cane and significantly outyielded all other varieties. This variety was followed by B.52144, B.52107, B.41211, B.52256 and B.52306. Taking the mean yields over the two crops, B.5213 has given the heaviest yield of cane followed by B.52214, B.52144, B.4744, B.52306, B.41211 and B.52298.

B.52371 gave the best quality juice as judged by the per cent sucrose in juice, and this was followed by B.5126. Neither of these varieties gave particularly outstanding cane yields. Juice purities were quite good on the whole, and there were few rotten canes.

TABLE XII

*Soil Type—Group II(a)—Select Seedling Trials—Plant Canes
River—Cut—11th March, 1957.*

VARIETY	Tons Cane per Acre	Tons Sugar per Acre	% Sucrose in Cane	Purity	No. of Rotten Canes per Plot
B.37161 ...	44.54	4.76	12.2	88.1	28
B.41211 ...	48.87	5.67	13.4	86.6	68
B.41227 ...	46.21	5.59	13.8	87.8	54
B.4744 ...	52.43	6.15	13.3	87.9	46
B.49119 ...	51.90	6.17	13.6	87.6	50

A difference of ± 5.59 tons cane per acre and ± 0.74 tons sugar per acre may be considered significant.

In this trial, B.4744 gave the heaviest yield of plant cane, and significantly outyielded B.37161 and B.41227. B.49119 gave the second heaviest yield of plant cane and was also significantly better than B.37161 and B.41227.

B.49119 gave the heaviest yield of sugar, closely followed by B.4744, B.41211 and B.41227. All of these varieties significantly outyielded B.37161. B.41227 had the best juice quality followed by B.49119. Juice purities were satisfactory, and all varieties had some rotten cane which was due to rat damage, B.41211 being the worst affected.

TABLE XIII

Soil Type—Group II(b)—Third Year Seedling Trials—Plant Canes
Small Ridge—Cut—28th January, 1957
Alleynedale—Cut—1st and 4th February, 1957

VARIETY	TONS CANE PER ACRE		Z. H. R. BRIX		% SUCROSE IN JUICE		PURITY		NO. OF ROT- TEN CANES PER PLOT	
	Small Ridge	Alleyn- dale	Small Ridge	Alleyn- dale	Small Ridge	Alleyn- dale	Small Ridge	Alleyn- dale	Small Ridge	Alleyn- dale
B.37161 ...	40.44	38.59	19.4	19.1	17.4	16.8	89.1	89.4	7	10
B.41211 ...	45.84	44.28	19.4	19.2	15.9	15.1	87.0	85.1	8	10
B.4744 ...	50.64	54.34	19.4	19.5	17.6	16.3	92.3	88.9	4	6
B.49119 ...	48.78	46.60	20.2	20.3	18.3	17.1	91.8	87.9	8	5
B.5321 ...	35.48	38.25	18.7	18.7	15.7	16.4	87.7	88.9	4	3
B.5398 ...	33.48	34.40	19.6	18.7	17.1	15.6	89.7	87.1	8	7
B.53122 ...	32.26	34.02	20.8	20.2	18.3	16.9	91.4	87.9	4	4
B.53200 ...	35.82	34.35	20.1	19.7	17.8	16.6	90.9	86.1	4	7
B.53227 ...	32.85	41.80	19.6	19.6	17.7	17.1	89.7	88.1	3	4
B.53317 ...	41.96	39.84	19.9	19.1	17.2	16.5	89.9	88.3	17	19
B.53320 ...	36.26	39.85	20.4	20.8	17.8	17.5	89.4	90.1	15	8
B.53362 ...	38.60	41.19	19.3	19.1	17.4	16.5	90.6	86.8	40	13

A difference of ± 4.20 tons cane per acre at Alleynedale and ± 5.18 tons cane per acre at Small Ridge may be considered significant.

In both of these trials, the standard varieties B.4744, B.49119 and B.41211 outyielded the selected varieties of the B.53' Series. At Small Ridge, B.49119 and B.53122 gave the best juices, while at Alleynedale B.53320 gave the best juice followed by B.49119 and B.53227. Juice purities were quite good on the whole, and there were few rotten canes in either trial.

TABLE XIV

Soil Type—Group II(b)—Third Year Seedling Trials—First Ratoons
Neils—Cut—21st and 22nd March, 1957.

VARIETY	TONS CANE PER ACRE		Z H.R. BRIX		% SUCROSE IN JUICE		PURITY		NO. OF ROT- TEN CANES PER PLOT	
	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.
B.37161 ...	40.14	42.20	16.8	20.3	13.8	18.2	85.0	89.2	17	8
B.41211 ...	43.61	49.18	17.5	20.3	14.2	18.1	82.9	87.4	39	17
B.4744 ...	59.34	55.11	17.5	22.0	13.8	18.7	84.9	88.3	18	20
B.5126 ...	40.57	46.07	18.0	21.2	15.2	19.8	84.7	88.3	9	6
B.5213 ...	48.77	54.08	15.5	20.2	13.5	17.9	83.0	88.2	14	12
B.5235 ...	41.72	44.21	16.5	20.9	14.9	18.9	87.1	90.7	38	34
B.52107 ...	49.66	51.44	16.3	20.7	12.4	19.0	81.4	89.9	7	6
B.52144 ...	47.78	51.94	17.3	20.7	13.9	17.9	84.2	87.9	12	13
B.52158 ...	41.27	44.06	17.1	20.5	13.7	17.7	82.4	87.0	34	30
B.52162 ...	43.90	48.07	16.8	21.2	13.4	18.2	84.0	89.0	20	8
B.52214 ...	56.38	56.73	16.1	20.6	12.9	17.8	83.7	87.3	24	21
B.52222 ...	49.68	49.06	16.1	21.2	12.0	18.1	78.3	87.5	13	9
B.52256 ...	42.51	47.64	15.1	19.5	10.5	16.6	72.1	83.9	23	17
B.52298 ...	53.61	58.44	16.9	21.4	13.7	18.6	82.6	85.2	7	11
B.52306 ...	55.90	53.52	15.9	20.9	12.5	18.1	82.4	88.3	7	8
B.52321 ...	41.59	55.45	18.5	21.6	15.0	19.3	86.4	88.7	8	9
B.52341 ...	48.36	47.43	16.4	19.5	13.6	17.5	84.1	87.6	5	8
B.52371 ...	44.00	41.57	17.3	22.5	14.8	20.3	81.1	88.1	7	6

A difference of ± 4.03 tons cane per acre may be considered significant.

In this trial, B.52298 gave the heaviest yield of ratoon cane followed by B.52214, B.52321, B.4744, B.5213 and B.52306. Taking the mean yields over the two crops, B.4744 has given the heaviest yield of cane closely followed by B.52214, B.52298 and B.52306. The juices of B.52306 and B.52214 are inclined to be poor, but the juice of B.52298 is reasonably good. In addition, B.52214 is recumbent and grows in a tangled mass, making cutting and cleaning very difficult. Juice purities, with one or two exceptions, were quite good. There was some rat damage and this is reflected in the number of rotten canes found.

TABLE XV

Soil Type—Group II(b)—Third Year Seedling Trials—First Ratoons
Searles—Cut—30th and 31st January, 1957

VARIETY	TONS CANE PER ACRE		Z.H.R. BRIX		% SUCROSE IN JUICE		PURITY		NO. OF ROT- TEN CANES PER PLOT	
	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.
B.37161 ...	34.61	35.35	18.0	19.8	15.5	16.2	89.6	88.3	24	4
B.41211 ...	38.91	46.62	18.1	17.8	14.7	14.7	84.1	83.5	15	10
B.4744 ...	42.11	44.33	17.7	18.4	15.4	14.3	88.7	83.2	16	6
B.5126 ...	29.38	29.17	19.5	20.5	16.6	17.8	88.6	89.0	5	6
B.5213 ...	36.82	47.29	17.2	18.5	13.2	14.8	83.1	84.6	19	5
B.5235 ...	34.63	37.63	16.4	19.2	14.6	16.2	86.2	85.5	29	10
B.52107 ...	37.06	41.45	16.9	18.4	14.4	15.4	85.8	86.8	8	4
B.52144 ...	37.49	44.06	18.1	19.5	15.0	15.4	87.4	85.6	18	6
B.52158 ...	33.41	37.61	18.7	19.0	13.5	15.1	80.1	83.3	30	8
B.52162 ...	37.58	37.91	18.0	18.4	13.7	15.3	84.8	85.3	15	4
B.52214 ...	47.61	47.45	18.0	18.6	13.9	14.5	84.1	83.1	16	4
B.52222 ...	34.89	41.32	17.6	19.5	14.2	15.5	84.9	84.8	9	3
B.52256 ...	33.83	39.61	16.2	18.7	12.0	13.4	75.7	76.1	13	4
B.52298 ...	45.05	46.66	18.2	18.5	15.9	14.7	87.7	83.0	7	1
B.52306 ...	40.48	46.09	17.3	18.5	14.2	13.8	84.7	81.6	9	2
B.52321 ...	35.31	46.71	19.0	19.2	16.7	16.0	90.8	87.1	12	3
B.52341 ...	37.48	41.59	17.7	16.8	14.7	13.4	87.4	82.4	6	4
B.52371 ...	31.90	31.06	19.1	20.3	16.9	16.9	88.6	84.7	8	1

A difference of ± 5.31 tons cane per acre may be considered significant.

In this trial, B.52214 gave the heaviest yield of ratoon cane followed by B.52321 B.52298, B.41211 and B.52306. Taking the mean yields over the two crops, B.52214 gave the heaviest yield of ratoon cane followed by B.52298, B.52306, B.4744 and B.41211. B.5126 gave the best juice and had the highest purity, but was not outstanding otherwise. Purities and sucroses on the whole were low, but as the trial was cut early in the crop season, this was to be expected. Few rotten canes were found in this trial.

TABLE XVI.

*Soil Type:—Group II (b)—Select Seedling Trials—Plant Canes**Vineyard—Cut—14th February, 1957**Frere Pilgrim—Cut—5th March, 1957*

VARIETY	TONS CANE PER ACRE		TONS SUGAR PER ACRE		% SUCROSE IN CANE		PURITY		NO. OF ROT- TEN CANES PER PLOT	
	Vine- yard	Frere Pilgrim	Vine- yard	Frere Pilgrim	Vine- yard	Frere Pilgrim	Vine- yard	Frere Pilgrim	Vine- yard	Frere Pilgrim
B. 37161 ...	38.55	40.08	4.45	4.61	13.1	12.7	88.4	90.3	27	16
B. 4098 ...	44.59	37.56	5.11	4.44	13.1	13.4	87.3	88.3	19	17
B. 41211 ...	56.86	38.98	6.09	4.57	12.7	13.3	84.4	88.1	15	155*
B. 4744 ...	53.91	56.81	6.56	6.61	13.9	13.2	87.8	88.5	11	35
B. 49119 ...	43.40	40.40	5.15	4.64	13.5	13.0	87.9	88.8	44*	11

*Rat eaten.

A difference of ± 3.52 tons cane per acre and ± 0.61 tons sugar per acre at Vineyard may be considered significant.

A difference of ± 3.42 tons cane per acre and ± 0.41 tons sugar per acre at Frere Pilgrim may be considered significant.

At Vineyard, B. 41211 gave the heaviest yield of plant cane followed by B. 4744, B. 4098 and B. 49119. B. 41211 and B. 4744 were both significantly better than the others. B. 49119 and B. 4098 were significantly better than B. 37161. B. 4744 gave the heaviest yield of sugar and significantly outyielded all other varieties. B. 41211 was in turn significantly better than the remainder and B. 4098 and B. 49119 significantly outyielded B. 37161. B. 49119 suffered rather severely from rat damage early in the growth cycle, before the other varieties had produced cane. Rat poison put out by the plantation then took care of these pests and there was no further damage. B. 4744 had the best juice and B. 41211 the poorest. It must be mentioned that none of the varieties was really ripe at the time of cutting.

At Frere Pilgrim, B. 4744 gave the heaviest yield of plant cane and sugar, greatly and significantly outyielding all other varieties tried. B. 49119 gave the second heaviest yields followed by B. 37161, B. 41211 and B. 4098. The differences between the mean yields of these varieties are not significant. B. 41211 suffered severely from rat damage, and this accounts for its low yield and the large number of rotten canes found. B. 4098 gave the best juice and B. 37161 the poorest. Juice purities were all good.

TABLE XVII.

*Soil Type—Group II (b)—Select Seedling Trials—First Ratoons**Halton—Cut—29th January, 1957.*

VARIETY	Tons Cane per Acre		Tons Sugar per Acre		% Sucrose in Cane		Purity		No. of Rot-ten Canes per Plot	
	Plant Canes	1st. Rtms.	Plant Canes	1st. Rtms.	Plant Canes	1st. Rtms.	Plant Canes	1st. Rtms.	Plant Canes	1st. Rtms.
B.37161 ...	51.28	44.27	5.77	4.97	12.7	12.7	88.5	88.7	42	29
B.45151 ...	49.59	50.79	5.39	5.33	12.6	12.2	86.4	85.8	163	20
B.4744 ...	65.55	60.60	6.97	6.03	12.3	11.7	86.5	85.1	54	19
B.47258 ...	46.25	47.34	4.90	5.14	12.4	12.6	85.4	86.1	75	35

A difference of ± 4.46 tons cane per acre and ± 0.32 tons sugar per acre may be considered significant.

In this trial, B.4744 gave the heaviest yield of ratoon cane and sugar, significantly outyielding the other varieties tried. B.45151 gave the second heaviest yield of cane and sugar followed by B.37161 and B.47258. B.37161 gave the best juice and B.4744 the poorest. There was some rat damage, but nothing like that observed in the plant cane crop. Juice purities were satisfactory considering the time of the year at which the trial was cut.

TABLE XVIII.

*Soil Type—Group II (b)—Select Seedling Trials—First Ratoons**Bennetts—Cut—5th February, 1957.*

VARIETY	Tons Cane per Acre		Tons Sugar per Acre		% Sucrose in Cane		Purity		No. of Rotten Canes per Plot	
	Plant Canes	1st. Rtms.	Plant Canes	1st. Rtms.	Plant Canes	1st. Rtms.	Plant Canes	1st. Rtms.	Plant Canes	1st. Rtms.
B.37161 ...	39.16	39.15	4.02	4.33	11.6	12.6	88.8	88.4	39	6
B.45151 ...	43.78	44.47	5.11	5.12	12.9	13.1	90.8	88.3	88	12
B.4744 ...	52.06	50.92	5.84	5.83	12.5	13.0	89.4	88.2	70	9
B.47258 ...	39.02	44.09	4.47	5.21	12.9	13.3	88.9	88.7	49	5

A difference of ± 4.40 tons cane per acre and ± 0.64 tons sugar per acre may be considered significant.

In this trial, B.4744 gave the heaviest yield of ratoon cane and sugar, and significantly outyielded all other varieties. B.45151 and B.47258 both outyielded B.37161 significantly on cane and sugar. B.47258 had the best juice and B.37161 the poorest. Juice purities were satisfactory and there was little rotten cane.

TABLE XIX

Soil Type—Group II(c)—Third Year Seedling Trials—Plant Canes

Portland—Cut—8th & 11th February, 1957

Bowmanston—Cut—14th and 15th March, 1957.

VARIETY	TONS CANE PER ACRE		Z. H. R. BRIX		% SUCROSE IN JUICE		PURITY		No. OF ROTTEN CANES PER PLOT	
	Port- land	Bow- manston	Port- land	Bow- manston	Port- land	Bow- manston	Port- land	Bow- manston	Port- land	Bow- manston
B.37161 ...	44.00	45.62	17.8	19.1	14.6	15.7	88.8	88.7	9	14
B.45151 ...	51.61	60.89	19.1	21.0	16.7	18.2	88.8	89.5	6	18
B.4744 ...	57.54	64.80	18.7	19.0	15.4	17.4	88.7	88.4	11	28
B.49119 ...	52.38	59.90	19.6	20.0	16.2	17.2	88.0	88.1	7	15
B.5321 ...	42.74	52.50	18.7	19.2	15.3	17.5	85.2	88.9	3	28
B.5398 ...	39.38	40.60	18.1	19.1	15.0	16.6	85.7	86.8	9	27
B.53122 ...	40.84	42.98	19.6	20.4	15.5	17.4	87.2	87.8	6	16
B.53200 ...	40.78	46.59	19.0	19.7	16.0	17.7	86.6	88.1	13	24
B.53227 ...	46.13	42.29	18.5	20.1	13.7	16.8	81.5	87.2	8	32
B.53317 ...	46.19	48.98	18.2	19.7	15.0	17.1	86.8	87.9	15	49
B.53320 ...	46.01	47.69	19.3	18.8	16.8	16.4	89.1	87.1	4	19
B.53362 ...	48.84	54.31	18.3	19.8	15.3	17.7	86.6	88.2	7	42

A difference of ± 4.36 tons cane per acre at Portland and ± 7.79 tons cane per acre at Bowmanston may be considered significant.

In this trial, B.4744 gave the heaviest yield of plant cane, significantly outyielding all other varieties. B.49119 was second, followed by B.45151. None of the varieties of the B.53' series gave yields approaching those given by the standard varieties mentioned above.

B.53320 gave the best quality juice followed by B.45151. Juice purities were satisfactory for the time of the year, and there were few rotten canes.

At Bowmanston, B.4744 gave the heaviest yield of plant cane followed by B.45151 and B.49119. Again none of the varieties of the B.53' series was as good as the standards. Juice purities were satisfactory. There was some rotten cane in this trial, but it was not excessive, and seems to have been fairly well distributed.

TABLE XX.

*Soil Type—Group II(c)—Third Year Seedling Trials—First Ratoons**Guinea—Cut 11th and 12th April, 1957,*

VARIETY		TONS CANE PER ACRE		Z.H.R. BRIX		% SUCROSE IN JUICE		PURITY		No. of Rot- TEN CANES PER PLOT	
		Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.
B.37161	...	40.21	43.62	17.8	20.2	14.3	18.1	86.5	91.0	30	26
B.41227	...	57.70	61.15	19.2	22.4	16.9	19.3	87.2	89.2	35	20
B.4744	...	55.85	51.96	18.8	21.3	15.5	18.5	85.4	90.4	31	17
B.5126	...	46.15	51.93	20.0	21.5	17.2	18.8	86.9	89.0	26	7
B.5213	...	48.61	52.65	18.0	20.4	15.7	17.5	86.4	88.8	26	27
B.5235	...	43.24	45.46	18.8	20.6	16.3	19.3	87.5	90.6	39	22
B.52107	...	50.66	53.93	18.5	21.0	16.3	18.5	88.3	89.8	19	13
B.52144	...	49.37	55.04	19.0	20.3	15.6	17.9	86.3	89.5	41	24
B.52158	...	48.37	52.47	18.9	21.6	15.4	17.6	84.1	85.3	70	22
B.52162	...	54.95	54.27	17.8	21.0	15.2	17.4	85.8	88.8	32	9
B.52214	...	61.00	57.96	18.2	21.0	15.5	18.9	84.6	90.2	27	19
B.52222	...	51.77	60.18	17.7	20.7	14.4	17.8	83.1	88.0	26	14
B.52256	...	48.75	48.65	17.3	20.7	12.4	16.7	75.3	83.6	46	11
B.52298	...	55.45	61.87	19.3	22.0	16.9	18.6	87.1	88.2	39	12
B.52306	...	55.22	55.27	18.0	19.8	15.6	17.3	87.6	86.7	19	9
B.52321	...	41.12	47.78	19.3	22.2	17.5	18.6	89.2	90.4	19	10
B.52341	...	47.23	50.61	18.0	19.9	14.5	17.4	84.9	89.1	21	13
B.52371	...	43.46	46.34	18.8	22.7	16.8	20.0	83.7	89.7	16	7

A difference of ± 7.43 tons cane per acre may be considered significant.

In this trial, B. 52298 gave the heaviest yield of ratoon cane followed by B. 41227, B. 52222, B. 52214 and B. 52306. Taking the mean yields over the two crops, B. 52214 has given the heaviest yield of cane closely followed by B. 41227, B. 52298, B. 52222, B. 52306 and B. 4744. B. 52371 gave the best quality juice, followed by B. 41227 and B. 5235. The juices of B. 52306 and B. 52222 were poor, and B. 52214 grew in a tangled mass, making cutting and cleaning extremely difficult. B. 52298 has a good juice and drops its trash readily. Juice purities were good on the whole and there were relatively few rotten canes.

TABLE XXI

Soil Type—Group II(c)—Third Year Seedling Trials—First Ratoons
Applewhaites—Cut—4th and 5th April, 1957

VARIETY	TONS CANE PER ACRE		Z.H.R. BRIX		% SUCROSE IN JUICE		PURITY		No. of ROT- TEN CANES PER PLOT	
	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.
B.37161 ...	40.67	36.23	17.8	20.2	15.1	17.9	88.2	90.8	29	16
B.41227 ...	55.08	51.47	18.9	21.8	15.4	18.9	85.1	89.8	63	22
B.4744 ...	51.77	48.71	19.5	21.9	17.9	19.7	90.0	91.2	47	21
B.5126 ...	42.82	48.80	19.1	21.9	17.6	20.0	88.6	91.0	15	9
B.5213 ...	48.10	46.14	17.5	19.7	14.7	17.7	85.0	89.0	33	20
B.5235 ...	45.44	46.55	17.3	20.9	15.3	18.4	86.3	90.2	84	51
B.52107 ...	48.23	47.76	18.8	20.7	16.2	18.8	88.2	90.0	16	23
B.52144 ...	48.07	42.88	18.1	20.5	16.2	17.6	88.1	90.3	42	43
B.52158 ...	47.02	46.82	18.7	21.8	14.6	18.4	82.5	88.7	61	28
B.52162 ...	46.73	42.34	18.4	20.5	15.1	18.1	85.9	90.7	22	16
B.52214 ...	57.76	46.91	18.6	20.8	14.9	16.3	84.9	87.8	45	16
B.52222 ...	51.41	48.07	18.0	20.5	17.5	18.0	87.2	88.9	25	15
B.52256 ...	50.76	48.34	17.8	20.2	14.4	16.8	82.8	84.2	21	21
B.52298 ...	54.47	53.08	18.5	21.3	17.6	19.2	89.1	88.7	23	14
B.52306 ...	47.13	53.52	17.2	20.6	15.0	18.8	84.9	90.7	15	11
B.52321 ...	44.46	52.65	19.5	22.4	18.2	20.4	91.1	91.7	32	17
B.52341 ...	44.94	37.92	18.0	21.0	16.6	18.1	88.7	90.1	24	13
B.52371 ...	44.38	44.64	19.5	22.5	18.2	20.4	88.5	88.2	10	5

A difference of ± 5.38 tons cane per acre may be considered significant.

In this trial, B.52306 gave the heaviest yield of ratoon cane, closely followed by B.52298, B.52321, B.41227, B.5126 and B.4744. Taking the mean yields over the two crops, B.52298 was heaviest, followed by B.41227, B.52214 B52306 and B.4744. B.52321 and B.52371 had the best juices, followed by B.5126 and B.4744. Juice purities were very good on the whole. There was some rat damage, and this is reflected in the number of rotten canes found.

TABLE XXII

Soil Type—Group II(c)—Select Seedling Trials—Plant Canes
Castle—Cut—19th March, 1957
Cottage—Cut—18th March, 1957

VARIETY	TONS CANE PER ACRE		Tons Sugar per Acre		% SUCROSE IN CANES		PURITY		No. of ROTTEN CANES PER PLOT	
	Castle	Cottage	Castle	Cottage	Castle	Cottage	Castle	Cottage	Castle	Cottage
B.37161 ...	35.76	49.87	4.23	4.81	13.2	10.9	90.1	88.1	28	22
B.41227 ...	43.72	53.53	5.35	5.28	13.9	11.4	87.9	86.4	44	22
B.45151 ...	44.90	50.34	6.08	5.47	14.8	12.0	91.3	90.2	23	65
B.4744 ...	47.83	64.00	6.09	6.66	14.5	11.7	89.3	89.0	26	24
B.49119 ...	38.71	52.28	4.59	5.20	13.3	11.2	89.2	88.4	23	22

A difference of ± 5.72 tons cane per acre and ± 0.72 tons sugar per acre at Castle may be considered significant.

A difference of ± 6.09 tons cane per acre and ± 0.80 tons sugar per acre at Cottage may be considered significant.

At Castle, B.4744 gave the heaviest yield of plant cane, significantly outyielding B.49119 and B.37161. B.45151 was also significantly better than B.49119 and B.37161, while B.41227 significantly outyielded B.37161. B.4744 and B.45151 significantly outyielded the other varieties on sugar. B.41227 was significantly better than B.49119 and B.37161 on sugar. Juice purities were good and rotten canes reasonable in number.

At Cottage, B.4744 significantly outyielded all other varieties on cane and sugar. B.41227 gave the second heaviest yield of plant cane, but was not significantly better than any of the other varieties. B.45151 gave the second heaviest yield of plant sugar and had the best juice of the lot. It was, however, not significantly better than the other varieties. B.45151 suffered some rat damage in this trial.

TABLE XXIII.

Soil Type—Group II(c)—Select Seedling Trials—First Ratoons

Castle—Cut—20th March, 1957.

VARIETY	TONS CANE PER ACRE		TONS SUGAR PER ACRE		% SUCROSE IN CANE		PURITY		No. of ROT- TEN CANES PER PLOT	
	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.
B.37161 ...	40.24	36.96	4.23	4.67	11.9	14.0	88.4	90.1	26	11
B.45151 ...	54.20	49.44	6.33	7.18	13.1	15.8	89.0	91.8	49	12
B.4744 ...	60.19	53.67	6.31	7.23	12.1	15.0	86.4	90.1	28	14
B.47258 ...	50.54	40.86	5.60	5.98	12.7	16.2	87.3	90.7	27	8

A difference of ± 7.03 tons cane per acre and ± 1.02 tons sugar per acre may be considered significant.

In this trial, B.4744 gave the heaviest yield of ratoon cane and was significantly better than B.47258 and B.37161, but not better than B.45151. B.45151 in turn significantly outyielded B.37161 and B.47258. B.4744 and B.45151 significantly outyielded B.47258 and B.37161 on sugar, and B.47258 was in turn significantly better than B.37161. B.47258 gave the best quality juice and B.37161 the poorest. Juice purities were very good, and there were few rotten canes.

TABLE XXIV.

Soil Type—Group IV(b)—Third Year Seedling Trials—Plant Canes
Valley—Cut—1st and 4th March, 1957.

VARIETY	Tons Cane per Acre	Z.H.R. Brix	% Sucrose in Juice	Purity	No. of Rotten canes per Plot
B.37161 ...	34.76	19.4	17.0	90.2	9
B.45151 ...	37.94	21.1	18.6	90.1	16
B.4744 ...	47.27	20.2	16.9	88.9	12
B.49119 ...	47.80	20.1	18.3	89.4	11
B.5321 ...	27.99	19.3	16.2	88.0	7
B.5398 ...	40.79	19.4	15.9	85.6	12
B.53122 ...	33.97	19.8	16.7	86.2	5
B.53200 ...	49.96	20.9	18.7	89.7	11
B.53227 ...	32.51	18.9	15.8	85.7	7
B.53317 ...	25.94	19.0	16.4	87.7	15
B.53320 ...	31.58	19.0	17.4	87.8	4
B.53362 ...	40.96	19.8	16.3	85.9	31

A difference of ± 3.66 tons canes per acre may be considered significant.

In this trial, B.53200 gave the heaviest yield of plant cane and had the best juice quality. However, it did not significantly outyield the standard varieties B.4744 and B.49119. None of the other varieties of the B.53' series gave yields approaching those given by the standard varieties B.4744 and B.49119. B.53200 arrowed heavily in the other trials, but in this one, arrowing was very scanty, and the conditions obviously suited it. Varieties outyielding B.4744 as a plant cane are rare, but the combination of high cane yields and high sucrose content is not often found. The ratoon results of this trial are awaited with interest.

TABLE XXV.

Soil Type—Group IV(b)—Third Year Seedling Trials—First Ratoons
Boarded Hall—Cut—12th and 13th March, 1957.

VARIETY	TONS CANE PER ACRE		Z.H.R. BRIX		% SUCROSE IN JUICE		PURITY		NO. OF ROT- TEN CANES PER PLOT	
	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.
B.37161 ...	40.84	40.15	18.6	19.7	15.6	17.1	90.7	89.4	20	8
B.41227 ...	40.51	45.13	18.7	20.1	15.7	17.8	86.5	88.4	22	12
B.4744 ...	50.27	41.45	18.2	20.4	16.0	18.1	88.2	89.8	17	9
B.5126 ...	35.21	33.40	19.7	21.0	17.5	18.9	87.6	88.2	7	4
B.5213 ...	42.78	48.52	17.3	19.4	15.7	16.4	88.4	87.2	31	9
B.5235 ...	39.07	41.64	17.6	20.0	15.7	17.6	88.6	89.8	38	29
B.52107 ...	46.51	46.18	18.0	19.4	16.0	17.2	88.6	89.2	8	7
B.52144 ...	46.81	50.32	18.8	20.7	15.7	17.3	89.2	89.2	24	14
B.52158 ...	37.52	40.31	18.5	20.1	16.0	17.1	86.7	86.6	34	17
B.52162 ...	41.43	42.67	17.9	19.6	15.1	17.1	87.5	88.1	22	9
B.52214 ...	48.50	44.91	18.3	19.9	15.1	17.1	87.2	87.4	21	9
B.52222 ...	35.93	43.28	18.4	20.2	15.6	16.7	88.0	87.0	12	5
B.52256 ...	36.21	39.70	16.9	19.2	13.6	16.1	81.2	84.6	16	9
B.52298 ...	43.41	50.10	19.1	21.2	15.9	18.2	87.6	87.9	9	6
B.52306 ...	45.82	41.68	17.6	19.4	16.4	17.4	90.2	88.1	14	6
B.52321 ...	41.85	45.83	18.7	20.7	16.8	18.0	89.2	88.5	13	6
B.52341 ...	45.26	43.55	16.9	19.6	16.0	17.6	90.1	88.1	17	7
B.52371 ...	33.30	33.01	19.8	21.7	17.8	19.4	87.9	88.3	9	1

A difference of ± 4.79 tons cane per acre may be considered significant.

In this trial, B. 52144 gave the heaviest yield of ratoon cane followed by B. 52298, B. 5213, B. 52107, B. 52321 and B. 41227. Taking the mean yields over the two crops, B. 52144 has given the heaviest yield of cane followed by B. 52298, B. 52214, B. 52107, B. 4744 and B. 5213. B. 52144 has a reasonably good juice and has given some fairly good yields in these trials. B. 52298 has again given good yields of cane and has quite a good juice. B. 52107 is a very thick cane and loses quite a large percentage of its yield if for any reason a cane is killed. However, it is quite sound and has a good juice. Juice purities were satisfactory and there were relatively few rotten canes.

TABLE XXVI.

*Soil Type—Group IV(b)—Select Seedling Trials—Plant Canes
Boarded Hall—Cut—15th February, 1957.*

VARIETY	Tons Cane per Acre	Tons Sugar per Acre	% Sucrose in Cane	Purity	No. of Rotten Canes per Plot
B.37161 ...	45.31	4.80	11.9	88.9	39
B.41227 ...	52.20	6.18	13.4	88.2	33
B.45151 ...	42.58	5.08	13.5	88.5	121*
B.4744 ...	59.91	7.21	13.4	89.6	28
B.49119 ...	48.36	5.48	12.9	87.9	77*

*Rat eaten.

A difference of ± 2.89 tons cane per acre and ± 0.41 tons sugar per acre may be considered significant.

In this trial, B. 4744 gave the heaviest yield of plant cane and sugar, greatly and significantly outyielding all other varieties tried. It was followed by B. 41227, B. 49119, B. 37161 and B. 45151. It should be noted that B. 45151 and B. 49119 suffered most severely from rat damage, which was considerable in this trial. B. 45151 on account of its superior juice outyielded B. 37161 on sugar. Juice purities were satisfactory considering the time of the year at which the trial was cut.

TABLE XXVII.

*Soil Type—Group IV(b)—Select Seedling Trials—First Ratoons
Buttals—Cut—3rd April, 1957.*

VARIETY	TONS CANE PER ACRE		TONS SUGAR PER ACRE		% SUCROSE IN CANE		PURITY		No. of ROT- TEN CANES PER PLOT	
	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.	Plant Canes	1st. Rtns.
B.37161 ...	37.39	35.91	4.15	4.85	12.5	14.8	88.8	91.2	33	32
B.45151 ...	36.59	37.01	4.13	5.44	12.5	16.0	88.2	91.7	41	45
B.4744 ...	42.04	43.69	4.64	6.07	12.6	15.5	87.5	89.6	22	40
B.47258 ...	37.59	34.23	4.17	5.06	12.8	16.3	86.5	90.7	26	38

A difference of ± 2.85 tons cane per acre and ± 0.35 tons sugar per acre may be considered significant.

In this trial, B.4744 gave the heaviest yield of ratoon cane and sugar, significantly outyielding all other varieties. B.45151 gave the second heaviest yield of ratoon cane but was not significantly better than B.37161 or B.47258. Taking the mean yields over the two crops, the position is the same as recorded above. B.45151 significantly outyielded B.47258 and B.37161 on ratoon sugar. It has also outyielded these varieties on total sugar. B.47258 had the best juice followed by B.45151. Juice purities were very good, but there were quite a number of rotten canes, which were fairly evenly distributed between the various varieties.

SUMMARY

In the Third Year Seedling Plant Cane Trials, only one variety — B.53200 — is worthy of mention, and that only on the heavy Group IV soils of the Bulkeley Valley, where arrowing is very scanty as a rule. B.53200 is a yellow-brown cane with a prominent white wax ring. It is exceptionally vigorous and has an excellent juice. Unfortunately, it flowers profusely in Barbados except in the Bulkeley Valley. It should be mentioned, however, that the growing season preceding the 1957 crop was extremely favourable, and flowering was exceptionally heavy in all varieties.

In the Third Year Seedling First Ratoon Trials, several varieties outyielded the standards. B.52298 would appear to be the most promising of this lot. It is derived from the cross Co. 421 x B.41211, and is a thick, yellow cane with a white wax ring which develops characteristic irregular brown blotches on the surface of the rind. These appear to be caused by a fungus, but are confined to the surface of the rind and have no effect on the cane itself. It has an excellent juice when the canes are ripe and appears to be a very powerful ratooner. There is an exceptionally large number of canes per stool, but individual canes are rather short. The canes shed their trash readily, and are easy to cut. Flowering is not a limiting factor even in the high rainfall areas. This variety will be planted in Select seedling Trials.

B.5213 has performed well, particularly in the low rainfall areas, where it has given very heavy yields of plant and ratoon cane. It is from the cross B.37161 x B.4098, and is a thick, red cane with a yellow growth ring, which sheds its trash readily. It suffered rather heavily during hurricane Janet by having its canes twisted, which caused the rind to split for almost the entire length of the cane in some places. The variety must be resistant to red rot, as although there was some reddening of the pith in the area immediately below the splits, the tops were still quite green and vigorous, and the canes by no means rotten. This variety will also be planted in Select Seedling Trials in the low and intermediate rainfall areas.

B.52107 gave quite good yields of plant and ratoon cane, particularly in the high rainfall areas. It is from the cross B.4145 x B.41227, and is a very thick, green-grey cane which sheds its trash readily. It has proved to be remarkably sound in trials, and will be included in Select Seedling Trials in the high rainfall areas.

B.52144 gave the heaviest yield of ratoon cane and total cane on the heavy Group IV soils of the Bulkeley Valley. It has also performed reasonably well in the other trials. Its juice quality appears to be in the same class as that of B.37161. Close attention will be paid to this variety when the second ratoon crop is being cut, and it will be planted in Select Seedling Trials if its performance and field characters warrant it.

In the Select Seedling Plant Cane Trials B.4744 was outstanding, significantly outyielding the other varieties on cane and sugar. B.49119 was somewhat disappointing after its outstanding performances in the Third Year Seedling Trials, even though it did suffer from rat damage in certain cases. B.45151 performed fairly well in these trials. It has an excellent juice and covers in early, effectively smothering weeds where these are troublesome. In commercial fields, its yields have been very satisfactory.

B.41227 has also performed quite well, and has a very good juice when the canes are ripe. Its chief defect is that it flowers very freely, particularly in the high rainfall areas, and those canes which have flowered usually dry out completely by the time the crop is cut, due to non-production of side shoots.

B.37161 is being planted commercially on a very much reduced scale. It is still at its best on the heavy Group IV soils of the Bulkeley Valley, where it has given some of its best yields. In other trials it has invariably given the lowest yields of cane and sugar. There can be no doubt that B.37161 has served Barbados well in the past, and there are certain areas where it can still be grown with advantage, particularly for very late reaping. However, it must to a very large extent give way to the newer seedlings, which are giving heavier yields of cane and sugar.

B.47258 was being tested as an early reaping variety. Its juice quality was not outstanding early in the crop, and its cane yields were not good enough to allow it to be considered as a variety for middle or late season reaping. It will not be tested further in Barbados.

III. PERFORMANCE OF VARIETIES IN CONTRIBUTING TERRITORIES

British Guiana:

The following table shows variety per cent acreages for the 1956 and 1957 crops:—

							1956	1957
B.37161	...	...	...	...	...	...	39.9	43.0
B.41227	...	...	...	...	...	...	31.1	32.1
B.4098	...	...	...	...	...	...	7.7	5.3
B.47225	...	...	...	...	...	...	4.7	5.0
B.4362	...	...	...	...	...	...	4.5	4.2
B.47258	...	...	...	...	...	...	0.9	2.8
Pindar	...	...	...	...	...	...	1.7	2.3
B.34104	...	...	...	...	...	...	2.9	0.4

The major standard varieties B.37161 and B.41227 both show a small increase in acreage. Of the newer varieties, the most popular and successful is B.47258, which is likely to show further gains in acreage in the future.

Antigua:

In the 1957 crop, per cent acreage figures were as follows:—

B.4098	...	...	...	...	...	93.1
B.37161	...	...	...	...	...	1.6
B.4744	...	...	...	...	...	1.0
B.49119	...	...	...	...	...	0.4
B.34104	...	...	...	...	...	0.3

Of the newer varieties, the most popular are B.4744 and B.49119, particularly the latter, which is likely to be planted on a very large scale in the near future.

St. Kitts:

In the 1956 and 1957 crops, the per cent acreage figures were:—

							1956	1957
B.37161	...	...	...	...	...	...	50.6	48.3
B.41211	...	...	...	...	...	...	34.8	38.3
B.34104	...	...	...	...	...	...	4.8	3.3
B.3337	...	...	...	...	...	...	2.4	2.2
B.41227	...	...	...	...	...	...	2.0	2.0

The increase in acreage under B.41211 has been largely at the expense of B.37161. Of the plant cane acreages, B.41211 leads with 44.4%, while B.37161 has 37.3%. Some interest is shown in B.45151, which represents 7.5% of the plant cane acreage.

Barbados:

Variety percentage figures for the 1958 crop together with those reaped in 1957, are as follows:—

							1957	1958
B.37161	...	...	...	...	...	...	54.49	37.95
B.41211	...	...	...	...	...	...	15.67	20.18
B.4744	...	...	...	...	...	...	11.09	15.69
B.45151	...	...	...	...	...	...	5.64	9.35
B.4098	...	...	...	...	...	...	7.85	6.42
B.49119	...	...	...	...	...	...	0.36	5.94
B.47419	...	...	...	...	...	...	1.11	1.18

The considerable change in the variety picture for the 1958 crop is accounted for mainly by increased plantings of B.41211, B.45151, B.4744 and B.49119. There was little planting of B.37161, whose acreage for 1958 is largely in ratoons. Figures for plant canes to be reaped in 1958 give a better indication of the popularity of the newer varieties. They are as follows:—

B.41211	...	...	...	...	...	25.34
B.4744	...	...	...	...	...	21.65
B.49119	...	...	...	...	...	17.95
B.37161	...	...	...	...	...	14.64
B.45151	...	...	...	...	...	13.54
B.4098	...	...	...	...	...	3.43
B.47419	...	...	...	...	...	1.08

Jamaica:

The figures for 1957 show, in comparison with those for 1956, an increase in the percentages under B.41227 and B.4362, with corresponding decreases for B.3439 and B.34104. Varieties with restricted distribution are B.37161 mainly in the dry northern area, B.37172 in the wet eastern region, and B.42231 on the irrigated plantations.

Per cent acreage figures are as follows:—

							1956	1957
B.41227	...	...	...	...	...	...	24	29
B.4362	...	...	...	...	...	...	18	21
B.42231	...	...	...	...	...	...	10	11
B.37172	...	...	...	...	...	...	7	7
B.37161	...	...	...	...	...	...	7	6
B.3439	...	...	...	...	...	...	9	6
B.34104	...	...	...	...	...	...	11	6

Trinidad:

There has been little change in the overall picture since 1956, except for a slight reduction in the area under B.37172 and a corresponding increase in that for B.41227. The figures are as follows:—

							1956	1957
B.3337	...	...	...	...	...	...	28.4	29.4
B.37172	...	...	...	...	...	...	28.2	25.9
B.37161	...	...	...	...	...	...	23.0	23.7
B.41227	...	...	...	...	...	...	8.7	11.3
B.34104	...	...	...	...	...	...	4.4	2.9
B.4362	...	...	...	...	...	...	3.1	2.5

Figures for plant cane acreages show that the most popular varieties at present are B.37161, B.41227 and B.37172—the latter showing a return to favour in spite of an overall reduction since 1956. Per cent plant cane acreages are as follows:—

							1956	1957
B.37161	...	...	...	...	...	...	34.4	26.6
B.41227	...	...	...	...	...	...	25.3	25.1
B.37172	...	...	...	...	...	...	18.5	26.3
B.3337	...	...	...	...	...	...	12.1	16.0

IV. DISTRIBUTION OF VARIETIES TO CONTRIBUTING AND OTHER COUNTRIES

Selected consignments of cuttings of the varieties of the B.54' Series were sent to those Contributing Countries for which they were selected. The varieties and the countries to which they were sent are given below:—

ANTIGUA AND ST. KITTS B.5401, B.5411, B.5449, B.5463, B.5480,
 B.5490, B.54142, B.54163, B.54172, B.54193,
 B.54215, B.54235, B.54237, B.54243, B.54253,
 B.54262, B.54277, B.54281 and N.Co.310.

Jamaica B.5411 and B.54215.

One hundred and fourteen seedlings of the B.56' Series— B.5601 to B.56114. In addition, the following varieties were sent for testing their reaction to chlorotic streak:—

Ba.11569, B.603, B.2935, B.37254, Local, B.40123, Co.270, Dacca, B.39220, Tabongo, B.35247, B.39274, B.39157, Kloet, B.44130, B.49232, Pasoeroean, B.46199, Kassoer, B.38272, B.3337, B.3439, B.34102, B.4145, B.42304, P.O.J.213, B.3365, B.35207, B.37193, B.35269, B.39254, B.41211, 28 N.G.251, 32 M.Q.657, B.48392, Co.290, B.43235, B.35218, B.45170, B.46103, B.43375, B.43283, B.40105, B.44341, B.43337, B.35276, B.40272, B.4454 and B.44234.

Seed of fifty-two crosses which it was thought was likely to carry resistance to mosaic disease was also sent to Jamaica.

TRINIDAD B.5401, B.5411, B.5449, B.5463, B.5480, B.5490, B.54142, B.54163, B.54172, B.54193, B.54215, B.54235, B.54237, B.54243, B.54253, B.54262, B.54277 and B.54281.

BRITISH GUIANA B.5401, B.5411, B.5449, B.5452, B.5463, B.5480, B.54142, B.54163, B.54172, B.54193, B.54215, B.54235, B.54237, B.54243, B.54253, B.54262, B.54277 and B.54281.

The following varieties were sent to British Guiana to test their reaction to chlorotic streak disease:—

Ba.11569, B.603, B.2935, Local, B.37254, B.40123, Co.270, Dacca, B.39250, Tabongo, B.35247, B.39274, B.39157, Kloet, B.44130, B.49282, Pasoeroean, B.46199, Kassoer, B.38272, B.3337, B.3353, B.3439, B.34102, B.4145, B.42304, P O J.213, B.3365, B.35207, B.37193, B.35269, B.39254, 28 N.G.251, 32 M.Q.657, B.41211, B.48392, Co.290, B.43235, B.35218, B.45170, B.46103, B.48375, B.43283, B.40105, B.44341, B.43337, B.35276, B.40272, B.4454 and B.44234.

In addition to the above, seed of forty-seven crosses which were considered to be likely to show resistance to leaf scald, was sent to British Guiana.

DOMINICAN REPUBLIC B.5124, B.51321, B.52107, B.52298 and B.52321.

GRENADA B.49119.

GUADELOUPE AND MARTINIQUE ... B.5401, B.5411, B.5449, B.5463, B.5480, B.5490, B.54142, B.54163, B.54172, B.54193, B.54215, B.54235, B.54237, B.54243, B.54252, B.54262, B.52277, B.54281, Trojan, Pindar and Q.50.

PANAMA B.45151, B.4744, B.47258, B.47314, B.49119, B.50153, B.50377 and B.51129.

AUSTRALIA B.37172, B.4362, B.47258, B.47380 and B.49311.

TAIWAN B.45151.

CEYLON B.37161, B.37172, B.4098 and B.4362.

ST. CROIX B.46364, B.4788, B.47258, B.47419, B.49119 and B.50112.

V. STATEMENT OF EXPENDITURE FOR 1956—57

1. Recurrent

1. Personal Emoluments	...	...	...	...	...	\$21,493.20
2. Provident Fund	...	...	...	...	...	1,298.40
3. Seedling Trials	...	...	...	...	...	23,990.41
4. Stationery and Library	...	...	...	...	...	863.94
5. Travelling Allowance	...	...	...	...	...	3,374.97*
6. Entertainment	...	...	...	...	...	67.86
7. Rent of Land	...	...	...	...	...	598.50
8. Incidentals	...	...	...	...	...	1,055.94
9. Repairs to Buildings at Groves	...	...	...	...	...	137.75
10. Rent of house for Senior Geneticist	...	...	...	...	...	1,590.00
						\$54,470.97

2. Non-Recurrent

Arrow Lanterns	...	...	...	...	\$ 219.59	
Irrigation	...	...	...	...	5,678.23	
Construction of walls for retention beds	...	...	...	...	156.39	
					\$6,054.21	6,054.21
TOTAL	...	...	...	...	...	\$60,525.18

* Supplemented by \$378.86 from Government Funds, being amount paid Senior Geneticist in error from Cane Breeding Station for his local travelling.

APPENDIX I

SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING 1956—57
B.59' SERIES

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery

CROSS	GROUP	No. Germinated (Estimated)	No. POTTED		No. PLANTED IN FIELD NURSERY	
			Singles	Bunches	Singles	Bunches
Ba.11569 x Comus ...	<i>S. officinarum</i> Noble	1,100	850	—	555	—
B.34102 x P.O.J.2878	<i>S. officinarum x S. spontaneum</i> 3rd Glagah Nobilisation	93	93	—	79	—
B.38272 x B.3915 ...	3rd Glagah Nobilisation	2	—	—	—	—
B.3172 x B.41211 ...	Noble Local x Glagah	200	200	—	158	—
B.37172 x B.41211 ...	" x " x "	228	228	—	158	—
B.4145 x Co.270 ...	" x " x "	15	15	—	15	—
B.35247 x B.46364 ...	Noble x Glagah x Celebes	5,000	889	288	646	274
		5,538	1,425	288	1,056	274
B.37161 x Co.270 ...	<i>S. officinarum x S. spontaneum x S. barberi</i> Noble x Local x Chunnee	69	69	—	50	—
B.37161 x Q.28 ...	" x " x "	10	10	—	9	—
B.45225 x B.603 ...	" x " x "	8	—	—	—	—
B.46284 x B.43235 ...	" x " x "	124	124	—	06	—
B.3439 x B.37193 ...	Noble x Glagah x Chunnee	6,000	600	223	329	90
B.35207 x B.53267 ...	" x " x "	44	44	—	32	—
B.35207 x P.O.J.2878	" x " x "	1,200	561	109	316	109
B.37161 x B.3337 ...	" x " x "	146	146	—	90	—
B.37161 x B.4327 ...	" x " x "	77	77	—	50	—
B.37161 x B.4362 ...	" x " x "	219	219	—	100	—
B.37161 x P.O.J.2878	" x " x "	78	78	—	61	—
B.37172 x B.4362 ...	" x " x "	47	47	—	37	—
B.42304 x B.37193 ...	" x " x "	3,000	225	189	160	130
B.4362 x B.39220 ...	" x " x "	123	123	—	46	—
B.4362 x Cl.41—223	" x " x "	600	330	45	170	45
B.4547 x B.603 ...	" x " x "	7	—	—	—	—
B.49353 x B.41227 ...	" x " x "	500	440	—	328	—
M.134/32 x B.41227 ...	" x " x "	1,200	649	89	570	70
P.O.J.2878 x B.41227 ...	" x " x "	3,100	522	427	407	320
P.O.J.2878 x B.44279 ...	" x " x "	154	154	—	107	—
P.O.J.3016 x B.41227 ...	" x " x "	1,800	277	243	216	235
H.32—8560 x B.41227 ...	" x " x "	420	420	—	260	—
H.32—8560 x P.O.J.2878	" x " x "	1,500	598	141	380	139
Ba.11569 x B.50153 ...	Noble x Local x Glagah x Chunnee	12	—	—	—	—
Ba.11569 x B.53317 ...	" x " x " x "	111	111	—	28	—
Ba.11569 x B.53227 ...	" x " x " x "	1	—	—	—	—
B.3172 x B.4098 ...	" x " x " x "	—	—	—	—	—
B.3365 x B.49119 ...	" x " x " x "	2,500	550	317	420	309
B.35206 x N.Co.310	" x " x " x "	2,200	752	234	492	226
B.37161 x B.4098 ...	" x " x " x "	2,000	994	—	613	—
B.37161 x B.4409 ...	" x " x " x "	260	260	—	110	—
B.37161 x B.47419 ...	" x " x " x "	1,000	346	120	250	118
B.37161 x B.49119 ...	" x " x " x "	600	497	—	377	—
B.37161 x C.P.44—155	" x " x " x "	156	156	—	143	—
B.37161 x N.Co.330	" x " x " x "	34	34	—	10	—
B.37161 x Pindar ...	" x " x " x "	152	152	—	55	—
B.4145 x N.Co.310	" x " x " x "	48	48	—	9	—

APPENDIX I—(Continued)

SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING 1956—57
B.59' SERIES

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery

CROSS		GROUP	No. Germinated (Estimated)	No. POTTED		No. PLANTED IN FIELD NURSERY	
				Singles	Bunches	Singles	Bunches
B. 4214	x B. 3337 ...	Noble x Local x Glagah x Chunnee	3,000	600	375	468	302
B. 4214	x B. 4098 ...	" x " x " x "	3,000	790	234	630	232
B. 42279	x B. 41211 ...	" x " x " x "	690	390	—	345	—
B. 42304	x B. 49119 ...	" x " x " x "	5,000	505	597	390	590
B. 4362	x B. 4098 ...	" x " x " x "	1,200	450	126	280	119
B. 4362	x B. 43235 ...	" x " x " x "	550	550	—	269	—
B. 4362	x B. 45236 ...	" x " x " x "	1,700	251	234	207	232
B. 4362	x B. 52178 ...	" x " x " x "	171	171	—	53	—
B. 4362	x Co. 281 ...	" x " x " x "	133	133	—	80	—
B. 4362	x Co. 419 ...	" x " x " x "	3,000	429	389	328	381
B. 43358	x B. 51353 ...	" x " x " x "	550	235	47	200	46
B. 45121	x B. 4362 ...	" x " x " x "	54	54	—	49	—
B. 45137	x B. 34104 ...	" x " x " x "	110	110	—	54	—
B. 45137	x B. 53362 ...	" x " x " x "	2,000	830	194	318	184
B. 45170	x B. 41227 ...	" x " x " x "	426	426	—	278	—
B. 45170	x B. 49119 ...	" x " x " x "	307	307	—	200	—
B. 46199	x B. 49119 ...	" x " x " x "	4	—	—	—	—
B. 46284	x P.O.J. 2878	" x " x " x "	20	20	—	19	—
B. 48106	x B. 4098 ...	" x " x " x "	398	398	—	270	—
B. 48330	x B. 4098 ...	" x " x " x "	294	294	—	172	—
B. 49282	x B. 34104 ...	" x " x " x "	55	55	—	44	—
B. 49372	x B. 42231 ...	" x " x " x "	458	458	—	217	—
B. 50151	x B. 41211 ...	" x " x " x "	351	351	—	216	—
B. 5124	x B. 3337 ...	" x " x " x "	124	124	—	88	—
B. 51311	x B. 4744 ...	" x " x " x "	270	270	—	204	—
B. 51311	x B. 49119 ...	" x " x " x "	456	456	—	390	—
B. 52242	x B. 4744 ...	" x " x " x "	106	106	—	19	—
B. 5336	x B. 4098 ...	" x " x " x "	52	52	—	28	—
Co. 360	x N.Co. 310	" x " x " x "	1,000	265	43	248	42
Co. 413	x B. 41211 ...	" x " x " x "	3,500	355	504	247	498
Co. 413	x B. 49119 ...	" x " x " x "	1,200	270	—	255	—
Co. 421	x B. 4098 ...	" x " x " x "	60	60	—	40	—
Co. 421	x B. 4995 ...	" x " x " x "	2,000	330	254	299	251
Otaheite	x B. 4098 ...	" x " x " x "	162	162	—	120	—
M. 134/32	x B. 4744 ...	" x " x " x "	136	136	—	50	—
P.O.J. 2878	x B. 34104 ...	" x " x " x "	339	339	—	155	—
P.O.J. 3016	x B. 34104 ...	" x " x " x "	79	79	—	50	—
Trojan	x B. 4098 ...	" x " x " x "	2,500	833	250	480	242
Ba. 11569	x B. 47177 ...	Noble x Local x Celebes x Chunnee	178	178	—	49	—
B. 43380	x B. 2935 ...	" x " x " x "	—	—	—	—	—
Ba. 11569	x B. 4968 ...	Noble x Local x Glagah x Celebes x Chunnee ...	46	46	—	18	—
B. 39157	x B. 4098 ...	Noble x Local x Glagah x Celebes x Chunnee ...	109	109	—	70	—
B. 39157	x B. 47419 ...	Noble x Local x Glagah x Celebes x Chunnee ...	171	171	—	140	—
B. 4362	x B. 49198 ...	Noble x Local x Glagah x Celebes x Chunnee ...	47	47	—	40	—
B. 43295	x B. 41227 ...	Noble x Local x Glagah x Celebes x Chunnee ...	102	102	—	94	—
B. 43349	x B. 47320 ...	Noble x Local x Glagah x Celebes x Chunnee ...	4,000	722	360	374	360

APPENDIX I—(Continued)

SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING 1956—57
B.59' SERIES

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery

CROSS	GROUP	No. Germinated (Estimated)	No. POTTED		No. PLANTED IN FIELD NURSERY	
			Singles	Bunches	Singles	Bunches
B.52371 x B.41227 ...	Noble x Local x Glagah x Celebes x Chunnee	1,000	460	—	380	—
B.53165 x B.4744 ...	Noble x Local x Glagah x Celebes x Chunnee	519	213	51	150	50
		71,127	23,325	5,795	15,386	5,320
Ba.11569 x B.35269 ...	<i>S. officinarum</i> x <i>S. sinense</i> 2nd Nobilisation Sinense ...	7	—	—	—	—
B.37226 x B.603 ...	" " "	—	—	—	—	—
		7	—	—	—	—
	<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. sinense</i>					
B.39254 x B.39257 ...	Noble x Local x Glagah x Sinense	—	—	—	—	—
B.45154 x B.46364 ...	Noble x Glagah x Celebes x Sinense	6,000	454	776	229	651
		6,000	454	776	229	651
	<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i> x <i>S. sinense</i>					
B.3365 x B.45151 ...	Noble x Local x Chunnee x Sinense	172	172	—	110	—
B.39254 x B.34104 ...	" x " x " x "	22	22	—	19	—
B.45115 x B.4362 ...	Noble x Glagah x Chunnee x Sinense	8	—	—	—	—
Ba.11569 x C.P.38—34	Noble x Local x Glagah x Chunnee x Sinense	59	59	—	44	—
B.34102 x B.45151 ...	Noble x Local x Glagah x Chunnee x Sinense	166	166	—	133	—
B.35207 x B.53218 ...	Noble x Local x Glagah x Chunnee x Sinense	2,000	730	210	300	210
B.39254 x B.49119 ...	Noble x Local x Glagah x Chunnee x Sinense	114	114	—	87	—
B.39254 x N.Co.310	Noble x Local x Glagah x Chunnee x Sinense	69	69	—	68	—
B.44305 x B.41227 ...	Noble x Local x Glagah x Chunnee x Sinense	159	159	—	113	—
B.45152 x B.5032 ...	Noble x Local x Glagah x Chunnee x Sinense	57	57	—	45	—
B.45152 x B.5301 ...	Noble x Local x Glagah x Chunnee x Sinense	41	41	—	16	—
B.47399 x B.49119 ...	Noble x Local x Glagah x Chunnee x Sinense	19	19	—	18	—
B.5055 x B.45151 ...	Noble x Local x Glagah x Chunnee x Sinense	184	184	—	125	—
B.51244 x B.45151 ...	Noble x Local x Glagah x Chunnee x Sinense	82	82	—	48	—
B.53355 x B.2935 ...	Noble x Local x Glagah x Chunnee x Sinense	14	14	—	—	—
B-39254 x B.50377 ...	Noble x Local x Glagah x Celebes x Chunnee x Sinense	15	15	—	14	—
		3,181	1,903	210	1,140	210

APPENDIX I —*Continued*SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING 1956—57
B.59' SERIES

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery

CROSS			No. Germinated (Estimated)	No. POTTED		No. PLANTED IN FIELD NURSERY	
				Singles	Bunches	Singles	Bunches
B.37161	x Badilla	... <i>S. officinarum x S. barberi</i> 4th Nobilisation Chunnee ...	—	—	—	—	—
Ba.11569	x C.P.31-517	... <i>S. officinarum x S. robustum</i> 2nd Nobilisation Robustum ...	550	300	—	240	—
Ba.11569	x 32 M.Q.629	... 3rd Nobilisation Robustum ...	1,800	504	215	276	203
			2,350	804	215	516	203
B.4455	x B.603	... <i>S. officinarum x S. spontaneum x S. robustum</i> ...	277	277	—	150	—
B.4457	x B.417	... Noble x Glagah x Robustum ...	464	464	—	150	—
B.44233	x B.603	... " x " x " ...	600	240	59	232	47
			1,341	981	59	532	47
B.37161	x B.51242	... <i>S. officinarum x S. spontaneum x S. barberi x S. robustum</i> Noble x Glagah x Chunnee x Robustum ...	252	252	—	160	—
B.4587	x B.4098	... Noble x Local x Glagah x Chunnee x Robustum ...	24	24	—	10	—
B.4862	x B.47419	... Noble x Local x Glagah x Chunnee x Robustum ...	247	247	—	90	—
B.48357	x B.34104	... Noble x Local x Glagah x Chunnee x Robustum ...	200	200	—	157	—
B.35247	x H.37-1933	... Noble x Glagah x Celebes x Chunnee x Robustum ...	167	167	—	110	—
			890	890	—	527	—
B.45107	x B.603	... <i>S. officinarum x S. barberi x S. robustum</i> Noble x Chunnee x Robustum ...	900	386	83	134	80
B.45198	x B.603	... " x " x " ...	900	386	83	134	80
Ba.11569	x Kalimpong	... <i>S. officinarum x Erianthus Maximus</i> 1st Nobilisation Erianthus ...	—	—	—	—	—
GRAND TOTALS ...			92,434	31,018	7,426	20,075	6,785

APPENDIX II

SUGAR CANE FIRST YEAR SEEDLINGS—B.58' SERIES

List of Crosses and Number of Seedlings of Each Planted in the Field Nursery (May 1956) and in the First Year Seedling Trial (October 1956)

CROSS	GROUP	NO. PLANTED IN THE FIELD NURSERY		No. PLANTED IN THE FIRST YEAR SEEDLING TRIAL
		Singles	Bunches	
P.O.J.2364 x B.603 ...	<i>S.officinatum</i> x <i>S. spontaneum</i> .	32	—	17
P.O.J.2364 x B.417 ...	3rd Glagah Nobilisation ...	64	—	29
B.3439 x B.3337 ...	" " " ...	166	47	55
Otaheite x B.52D.23 ...	Noble x Local x Glagah ...	120	—	29
B.3439 x B.48392 ...	" x " x " ...	3	—	1
B.37172 x B.41211 ...	" x " x " ...	23	—	16
B.4145 x B.41211 ...	" x " x " ...	—	95	72
Co.421 x B.52D.21 ...	" x " x " ...	980	—	97
B.4145 x B.39246 ...	Noble x Dacca x Glagah ...	7	—	7
		1,395	142	323
	<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i>			
B.3439 x B.37193 ...	Noble x Glagah x Chunnee	—	1,039	370
B.3439 x B.4362 ...	" x " " " ...	5	—	3
B.35207 x P.O.J.2878 ...	" x " x " " ...	65	93	76
B.37161 x B.4362 ...	" x " x " " ...	9	—	3
B.37161 x P.O.J.2878 ...	" x " x " " ...	17	—	7
B.37172 x B.41227 ...	" x " x " " ...	—	8	8
B.37172 x B.46136 ...	" x " x " " ...	11	—	7
B.4362 x P.O.J.2878 ...	" x " x " " ...	—	46	34
H.32-8560 x P.O.J.2878 ...	" x " x " " ...	—	58	50
M.134/32 x B.4362 ...	" x " x " " ...	136	—	43
P.O.J.2878 x B.41227 ...	" x " x " " ...	17	—	8
P.O.J.2878 x B.4362 ...	" x " x " " ...	190	—	83
P.O.J.3016 x B.41211 ...	" x " x " " ...	—	104	58
P.O.J.3016 x B.4362 ...	" x " x " " ...	12	—	8
B.37161 x B.53E.241 ...	" x " x " " ...	178	—	26
B.37161 x Co.270 ...	Noble x Local x Chunnee	9	—	7
B.3365 x B.51321 ...	Noble x Local x Glagah x Chunnee	9	—	5
B.37161 x B.4098 ...	" x " x " " ...	209	—	118
B.37161 x B.41211 ...	" x " x " " ...	—	78	44
B.37161 x B.4744 ...	" x " x " " ...	22	—	14
B.37161 x B.49396 ...	" x " x " " ...	17	—	6
B.37161 x B.51134 ...	" x " x " " ...	298	—	61
B.37161 x C.P.44—155 ...	" x " x " " ...	24	—	19
B.37161 x N.Co.310 ...	" x " x " " ...	—	118	76
B.38233 x B.4098 ...	" x " x " " ...	157	—	38
B.4092 x B.41211 ...	" x " x " " ...	—	200	81
B.4092 x B.4744 ...	" x " x " " ...	14	—	7
B.4145 x B.4788 ...	" x " x " " ...	—	106	63
B.42279 x B.3337 ...	" x " x " " ...	152	184	95
B.42279 x B.4098 ...	" x " x " " ...	—	115	64
B.4362 x B.4098 ...	" x " x " " ...	—	77	46
B.4373 x B.4098 ...	" x " x " " ...	—	115	47
B.4373 x B.42231 ...	" x " x " " ...	210	—	85

APPENDIX II—Continued

CROSS	GROUP	No. PLANTED IN THE FIELD NURSERY		No. PLANTED IN THE FIRST YEAR SEEDLING TRIAL
		Singles	Bunches	
B.48330 x Co.290 ...	Noble x Local x Glagah x Chunnee	117	—	71
B.4906 x B.4098 ...	" x " x " ...	740	44	356
B.49282 x B.34104 ...	" x " x " ...	5	—	5
B.5011 x B.42231 ...	" x " x " ...	5	—	4
B.5028 x P.O.J.2878 ...	" x " x " ...	239	—	64
B.5037 x B.41211 ...	" x " x " ...	—	575	188
B.5037 x B.5121 ...	" x " x " ...	111	—	34
B.50126 x B.42231 ...	" x " x " ...	166	—	62
B.50215 x B.42231 ...	" x " x " ...	616	—	359
B.50352 x P.O.J.2878 ...	" x " x " ...	48	—	30
B.5142 x B.4098 ...	" x " x " ...	320	19	136
B.51131 x B.4098 ...	" x " x " ...	—	57	43
B.51167 x B.4098 ...	" x " x " ...	32	—	18
B.5214 x B.4098 ...	" x " x " ...	454	—	97
B.52184 x B.4098 ...	" x " x " ...	34	—	20
B.52242 x P.O.J.2878 ...	" x " x " ...	28	—	13
Co.421 x B.4098 ...	" x " x " ...	113	—	63
Co.421 x N.Co.330 ...	" x " x " ...	122	—	53
F.36—819 x B.4098 ...	" x " x " ...	—	129	78
F.36—819 x B.4744 ...	" x " x " ...	—	122	82
H.32—8560 x B.34104 ...	" x " x " ...	—	23	20
H.32—8560 x B.4098 ...	" x " x " ...	—	195	131
M.134/32 x B.34104 ...	" x " x " ...	96	—	60
Pepe Cuca x B.4098 ...	" x " x " ...	18	—	13
P.O.J.2878 x B.34104 ...	" x " x " ...	277	175	131
P.R.1000 x B.34104 ...	" x " x " ...	167	—	73
Trojan x B.4098 ...	" x " x " ...	—	70	49
B.35207 x B.52D.24 ...	" x " x " ...	110	—	30
B.37161 x B.53C.412 ...	" x " x " ...	268	—	71
B.52D.21 x B.52U.12 ...	" x " x " ...	900	—	175
B.39207 x B.53C.414 ...	" x " x " ...	3	—	3
Otaheite x B.53C.415 ...	" x " x " ...	3	—	1
B.43349 x B.47320 ...	Noble x Celebes x Glagah x Local x Chunnee	361	457	168
B.5037 x B.43346 ...	" x " x " ...	—	538	114
B.50210 x B.34104 ...	" x " x " ...	—	132	91
Tukuyu No. 2 x B.4098	Noble x Glagah x Local x Tukuyu x Chunnee	7	—	4
B.4145 x B.45109 ...	Noble x Glagah x Celebes x Chunnee	147	—	75
		7,492	4,877	4,645
B.37226 x B.603 ...	<i>S. officinarum</i> x <i>S. sinense</i> 2nd Nobilisation Sinense ...	3	—	—
Ba.11569 x C.P.38—34 ...	<i>S. Officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i> x <i>S. sinense</i> Noble x Glagah x Local x Chunnee x Sinense	11	—	8
B.39254 x B.4408 ...	" x " x " ...	3	—	2
B.39254 x B.4738 ...	" x " x " ...	19	—	16

APPENDIX II—Concluded

CROSS	GROUP	NO. PLANTED IN THE FIELD NURSERY		NO. PLANTED IN THE FIRST YEAR SEEDLING TRIAL
		Singles	Bunches	
B.39254 x B.49119 ...	Noble x Glagah x Local x Chunnee x Sinense	195	—	81
B.39254 x N.Co.310 ...	" x " x " x " ...	93	—	50
B.44341 x B.41211 ...	" x " x " x " ...	26	—	8
B.44341 x B.45151 ...	" x " x " x " ...	36	—	—
B.44341 x H.32—1063 ...	" x " x " x " ...	3	—	3
B.47329 x B.47419 ...	" x " x " x " ...	61	—	20
B.51259 x B.4098 ...	" x " x " x " ...	455	240	274
H.32—8560 x B.45151 ...	" x " x " x " ...	157	330	299
M.134/32 x B.45151 ...	" x " x " x " ...	—	125	59
B.39254 x B.34104 ...	Noble x Local x Chunnee x Sinense	46	—	18
		1,105	695	838
	<i>S. officinarum</i> x <i>S. barberi</i> x <i>S. sinense</i>			
B.39254 x B.37193 ...	Noble x Chunnee x Sinense	105	—	34
	<i>S. officinarum</i> x <i>S. sinense</i> x <i>S. spontaneum</i>			
B.47183 x B.603 ...	Noble x Celebes x Sinense ...	45	—	23
	<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. robustum</i>			
B.47155 x B.603 ...	Noble x Celebes x Robustum	37	—	15
	<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i> x <i>S. robustum</i>			
B.4362 x H.37—1933 ...	Noble x Glagah x Chunnee x Robustum	285	115	102
B.49388 x B.47419 ...	Noble x Glagah x Local x Chunnee x Robustum	—	444	137
		285	559	239
	<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. sinense</i> x <i>S. robustum</i>			
B.48306 x B.603 ...	Noble x Glagah x Sinense x Robustum	—	140	28
	<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i> x <i>S. sinense</i> x <i>S.</i> <i>robustum</i>			
B.45152 x H.37—1933 ...	Noble x Glagah x Local x Chunnee x Sinense x Robus- tum ...	112	—	36
	GRAND TOTALS ...	10,579	6,413	6,181

